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herb, more or less viscid-pubescent, especially the inflorescence. Lower leaves ovate, acuminate, often 3 to 4 in. long, upper ones smaller, ovate-lanceolate or lanceolate, all narrowed to the base but scarcely petiolate, slightly toothed or entire. Flower-heads numerous, rather small, clustered and corymbose on the lateral branches of a large terminal panicle. Involucral bracts nearly equal, about 2 lines long, the outer ones linear-lanceolate, acute, the inner narrower, more acuminate, and more scarious. Pappus slightly exceeding the involucre. Ray-florets exceedingly numerous, the style about as long as the pappus, the filiform corollas very much shorter. Disk-florets about 2 to 6.—*C. Wallichii*, DC. Prod. v. 384; *C. polycephala*, Edgew. in Trans. Linn. Soc. xx. 66.

Queensland. Shoalwater Bay, *R. Brown*.

N. S. Wales. Edge of the scrub, Richmond river, (*C. Moore ?*) *in Herb. F. Mueller*.

The species is common in India. It has much the aspect of *Blumea balsamifera*, DC., but differs both in involucre and anthers.

2. **C. ægyptiaca,** *Ait.; DC. Prod.* v. 382. A coarse, erect, hirsute annual or biennial, sometimes 2 to 3 ft. high and nearly simple, except the terminal panicle, sometimes divaricately branched below the middle. Leaves lanceolate or oblong, obtuse or rarely almost acute, coarsely toothed in their whole length or at the base only, or pinnatifid with ovate oblong or rarely linear lobes. Flower-heads rather large for the genus, shortly pedicellate, in dense cymes or clusters, forming a terminal corymbose panicle. Involucral bracts narrow, subulate-acuminate, the inner ones above 3 lines long. Florets and pappus not exceeding the involucre. Ray-florets exceedingly numerous, all filiform, but not so short as in *C. viscidula*; disk-florets also numerous, but varying in different heads.—*C. leariloba*, DC. Prod. v. 385.

Queensland. Northumberland Islands, Lizard Island, Broad Sound, *R. Brown*; Port Molle, *M'Gillivray*; Burnett and Burdekin rivers, *F. Mueller*; Rockingham Bay and Rockhampton, *Dallachy*; Brisbane river, *Fraser*; Keppel Bay, *Thozet*; also from *Leichhardt's Collection*.

The species is common in tropical and subtropical Asia and Africa. Most of the Australian specimens, like some from Amoy (*Hance*), and the majority of the Mauritius ones I have seen, belong to a variety with the leaves more decidedly pinnatifid than they are usually in the Egyptian and Indian specimens; but in some of the Australian specimens the leaves are toothed only as in the Egyptian and Indian ones, and one gathered on the Nile by Speke and Grant has them precisely like the common Australian form.

17. MINURIA, DC.

(Thérogeron, *DC.*; Elachothamnus, *DC.*; Kippistia, *F. Muell.*)

Involucre ovoid or hemispherical, the bracts narrow, in few rows, dry or scarious on the margin. Receptacle without scales. Florets of the ray female, numerous, in several rows, ligulate but very narrow and sometimes short. Disk-florets hermaphrodite, but sterile, numerous or few, tubular, dilated upwards, usually 5-toothed. Anthers obtuse at the base. Style-lobes with obtuse acute or somewhat elongated tips, papillose on the back or the style simple and semiabortive. Achenes of the ray flattened, with thickened margins, obovate or narrow, those of the disk slender and abortive. Pappus of the ray of numerous capillary bristles, that of the disk variously reduced or more paleaceous.—Undershrubs or shrubs, glabrous or the young branches woolly or pubescent. Leaves alternate, narrow, entire or toothed. Flower-heads hemispherical or broadly ovoid, pedunculate, solitary or corymbose. Ray-florets usually white.

The genus is confined to Australia. It is allied to *Erigeron*, differing chiefly in the abortive disk-achenes, with a reduced or altered pappus.

Involucral bracts oblong-linear with scarious ciliate margins. Ray-achenes very densely silky-hairy	1. *M. leptophylla.*
Involucral bracts narrow, acute. Ray-achenes glabrous or slightly pubescent.	
Involucre about 3 lines long. Disk-pappus of 5 to 10 bristles, with several short ones	2. *M. Cunninghamii.*
Involucre not 2 lines long. Disk-pappus of fewer bristles than the ray, with several or scarcely any short ones.	
Glaucous and glabrous. Leaves lanceolate or linear, very acute	3. *M. integerrima.*
Young shoots woolly. Leaves linear, obtuse, entire or toothed	4. *M. denticulata.*
Involucral bracts oblong-linear, ciliate, about 2 lines long. Ray-achenes glabrous. Disk-pappus united in a tube	5. *M. suædifolia.*

1. **M. leptophylla,** *DC. Prod.* v. 298. An undershrub or small shrub, with numerous erect or ascending branches, under 1 ft. and often under 6 in. high, glabrous or pubescent in the upper portion. Leaves narrow-linear, almost filiform, mucronate-acute or almost obtuse, $\frac{1}{4}$ to $\frac{1}{2}$ in. long in some specimens, $\frac{1}{2}$ to 1 in. in others, the upper ones small and few. Flower-heads terminal, pedunculate above the last leaves. Involucre hemispherical, the bracts not numerous, in 2 or 3 rows, with scarious ciliate margins, the inner ones 2 to $2\frac{1}{2}$ lines long, a few of the outer ones smaller. Ray-florets 20 to 30, with oblong linear ligulæ. Disk-florets about as long as the involucre. Achenes of the ray so densely covered with long silky hairs as to conceal their form, with a pappus of numerous nearly equal bristles; achenes of the disk abortive, terete, nearly glabrous, most of the pappus bristles very short and slightly flattened at the base, a few only elongated and usually thickened or plumose at the end.—*M. tenuissima*, DC. Prod. v. 298; *M. asteroidea*, Sond. in Linnæa, xxv. 467.

N. S. Wales. Lachlan river, *A. Cunningham*; Macquarrie river, *Mitchell*; Lachlan, Darling, and Murray rivers, to the Barrier range, *Victorian and other Expeditions.*

Victoria. Wimmera, *Dallachy.*

S. Australia. Dry grassy places and sandy plains, from the Murray to St. Vincent's Gulf, *F. Mueller* and others; Lake Gillies, *Burkitt.*

W. Australia, *Drummond, 5th Coll. n.* 372.

Var.? *hispida.* The whole plant hirsute with short spreading hairs.

Queensland. Rockingham Bay, *Dallachy*, a single slender specimen in Herb. F. Mueller, with a single flower-head, insufficient for examination, and therefore the determination doubtful.

2. **M. Cunninghamii,** *Benth.* A bushy shrub or undershrub, with short slender branchlets, quite glabrous. Leaves narrow-linear, entire, the longer ones acute and above $\frac{1}{2}$ in. long, the smaller ones often obtuse, thick and almost fleshy. Peduncles terminal, longer than the leaves. Involucre

ovoid or almost hemispherical, about 3 lines long, the bracts narrow, acute. Ray-florets numerous, narrow, longer than the pappus; disk-florets usually few. Achenes of the ray glabrous or slightly pubescent, narrow, but flat, with a pappus of numerous very fine white capillary bristles; achenes of the disk nearly terete and abortive, the bristles all, except 5 to 10, very short. —*Elachothamnus Cunninghamii*, DC. Prod. v. 398; F. Muell. Pl. Vict. t. 34; *Eurybiopsis intricata*, F. Muell. in Linnæa, xxv. 396; *Therogeron tenuifolius*, Sond. in Linnæa, xxv. 467.

N. S. Wales. Swampy situations, Lachlan river, *A. Cunningham*; Yayinga mountains, Darling river, *Victorian Expedition*, on the Murray, towards the Murrumbidgee, *F. Mueller.*

S. Australia. Stony shady places, Cudnaka, *F. Mueller.*

3. **M. integerrima,** *Benth.* Perfectly glabrous, smooth and somewhat glaucous. Stems, from a perennial often woody base, erect, rigid, often corymbosely branched, rarely above 1 ft. high. Leaves lanceolate or linear, acute, quite entire, mostly ½ to 1 in. or rarely 2 in. long, the upper ones few and small. Flower-heads small, terminal. Involucre broadly hemispherical, 2 to 3 lines diameter, with numerous narrow bracts, scarious on the edges. Ray-florets exceedingly numerous, in many rows, small, narrow, white; disk-florets sometimes only 2 or 3, sometimes numerous. Achenes of the ray small, flat, the pappus-bristles fine, white and not very numerous; achenes of the disk abortive, with still fewer pappus-bristles, occasionally accompanied by a few short ones.—*Therogeron integerrimus*, DC. Prod. v. 283.

N. Australia. Hooker's and Sturt's Creeks, *F. Mueller.*

Queensland. Burdekin river, *F. Mueller*; Condamine river, *Leichhardt*; Cape river, *Bowman.*

N. S. Wales. Lachlan river, *A. Cunningham*; Bogan river, *Mitchell*; Murray and Darling deserts, and thence to the Barrier Range, *Victorian and other Expeditions.*

Victoria. Murray desert, *F. Mueller.*

S. Australia. Murray river, *F. Mueller*; Cooper's Creek, *Herb. F. Mueller*; N.W. interior, *M'Douall Stuart's Expedition.*

4. **M. denticulata,** *Benth.* Allied to *M. integerrima*, but more branching, with diffuse or ascending stems, rarely above 8 or 9 in. high, the young shoots and sometimes the whole plant clothed with a white woolly tomentum. Leaves linear or linear-oblong, obtuse, entire or remotely toothed. Flower-heads, florets, and achenes of *M. integerrima*, but the disk-pappus more generally accompanied by a few very short bristles slightly dilated at the base. —*Therogeron denticulatus*, DC. Prod. v. 283.

N. S. Wales. Arid plains of the interior, *Fraser*, *A. Cunningham*; Darling and Lachlan rivers, *Victorian Expedition.*

Victoria. Murray desert, *Dallachy.*

S. Australia. In the interior, *M'Douall Stuart's Expedition.*

F. Mueller proposes to unite this with *M. integerrima* as one species under the name of *Erigeron Candollei.*

5. **M. suædifolia,** *F. Muell.* under *Kippistia.* A small bushy shrub or undershrub, under 1 ft. and often under 6 in. high, glabrous and glaucous. Leaves narrow-linear, nearly terete, under ½ in. long, mostly recurved at the end. Flower-heads small, pedunculate. Involucre hemispherical, 2 to 3 lines diameter, the bracts oblong-linear, ciliolate, in few rows. Ray-florets

numerous, very little exceeding the involucre; disk-florets numerous, as long as the involucre. Achenes of the ray flat, with a pappus of rather numerous bristles, the outer ones free, the inner ones more or less connate; achenes of the disk abortive, the pappus united in a more or less toothed scarious tube.—*Kippistia suædifolia*, F. Muell. Rep. Babb. Exped. 12, and Pl. Vict. t. 35.

Victoria. Wimmera, *Dallachy.*

S. Australia. Coorong desert, *Irvine;* towards Spencer's Gulf, *Warburton;* Stuart's Creek, *Babbage's Expedition.*

18. CALOTIS, R. Br.

(Huenefeldia, *Walp.;* Goniopogon, *Turcz.;* Cheiroloma, *F. Muell.*)

Involucre usually hemispherical, the bracts in about 2 rows, nearly equal, broad or narrow, with dry or scarious margins and usually a few inner narrow bracts. Receptacle flat or convex, without scales. Florets of the ray female, ligulate, often numerous, but in a single row. Disk-florets numerous, apparently hermaphrodite but sterile (except in *C. hispidula*), tubular, 5-toothed. Anthers obtuse at the base. Style-branches in the disk-florets somewhat flattened or almost filiform, usually obtuse, papillose outside at the end. Fruiting-heads usually globular. Achenes of the ray flat, obovate or oblong. Pappus of 2 or more barbed bristles, sometimes all short, but more frequently 1, 2 or more growing out into rigid divaricate awns or spines, and accompanied sometimes by 2 or more truncate scales. Disk-achenes usually abortive.—Perennial herbs or rarely annuals, with the habit nearly of *Brachycome.* Leaves alternate, entire toothed or pinnately divided. Flower-heads pedunculate, the rays white, rarely blue or purple.

The genus is confined to Australia.

SECTION I. **Eucalotis.**—*Pappus consisting of rigid barbed awns and flat truncate scales. Perennials with leafy stems.*

Leaves linear-lanceolate or oblong, remotely toothed or pinnatifid.
  Scales of the pappus usually united in a cup; awns 1 or 2 . . . 1. *C. dentex.*
Leaves cuneate or spathulate, toothed at the end. Scales of the pappus 2 or 3, alternating with the awns. Plant not glandular . 2. *C. cuneifolia.*
Leaves oblong-cuneate, deeply toothed at the end. Scales of the pappus 3 to 6, alternating with the awns. Plant glandular-hirsute 3. *C. glandulosa.*

SECTION II. **Cymbaria.** *Pappus consisting of 2 or more rigid awns, dilated and united at the base, without scales. Perennials with leafy stems, sometimes appearing annual.*

Awns of the pappus 2, almost boat-shaped at the base. Plant usually pubescent or hirsute . . . . 4. *C. cymbacantha.*
Awns of the pappus several, united in a glabrous cup at the base.
  Stems elongated, glabrous or nearly so . . . . 5. *C. erinacea.*

SECTION III. **Acantharia.**—*Pappus consisting of several unequal awns, all distinct and usually hispid at the base, sometimes all short.*

Achenes not winged. Perennials.
  Stock emitting stolons or creeping rhizomes and a tuft of radical leaves. Scapes simple or with very few heads.
    Radical leaves entire, toothed or lobed.
      Rhizome creeping. Plant usually hirsute. Radical and lower leaves mostly toothed. Fruiting heads ½ in. diameter 6. *C. scabiosifolia.*

Plant stoloniferous, usually glabrous. Leaves radical, narrow. Scapes almost leafless. Fruiting heads small . . . . . 7. *C. scapigera.*

Radical leaves pinnate with pinnatifid or linear segments. Involucral bracts few, broad . . . . 8. *C. anthemoides.*

Stems numerous, erect, several-headed, the radical leaves decayed before flowering. Flower-heads small. Involucral bracts narrow.

Upper leaves linear. Pappus longer than the achenes. Fruiting-heads nearly 3 lines diameter . . . . 9. *C. lappulacea.*

Upper leaves small, cuneate. Pappus shorter than the achenes. Fruiting-heads not 2 lines diameter . . . . 10. *C. microcephala.*

Achenes winged. Pappus short or of very fine awns. Perennial with slender branching stems . . . . 11. *C. breviseta.*

Small annuals.

Ray white. Achenes completely covered with long intricate or plumose hairs . . . . 12. *C. plumulifera.*

Ray purple. Achenes shortly hirsute with ciliate wings . . . 13. *C. porphyroglossa.*

Ray white. Achenes nearly glabrous, the wings very shortly ciliate . . . . 14. *C. pterosperma.*

SECTION IV. **Cheiroloma.**—*Ray-florets scarcely exceeding the pappus. Disk-florets fertile. Pappus consisting of several unequal awns, alternating with very short, entire or lobed bristles or scales.*

Annual. Achenes not winged . . . . 15. *C. hispidula.*

SECTION I. EUCALOTIS.—Pappus consisting of rigid barbed awns and flat truncate scales. Perennials with leafy stems.

1. **C. dentex,** *R. Br. in Bot. Reg. under n.* 504. A perennial, with nearly simple or branched erect or decumbent stems, attaining sometimes 2 or 3 ft., scabrous-pubescent or hispid. Leaves linear, lanceolate or oblong, usually acute, acutely and remotely toothed or pinnatifid, mostly 1 to 2 in. long, often dilated into stem-clasping auricles. Flower-heads pedunculate. Involucre hemispherical, scabrous-pubescent; bracts not numerous, ovate, 3- or 5-nerved, almost membranous, the narrow inner ones very few or none. Achenes of the ray flat, obovate, scabrous or almost muricate. Pappus of 2 or 3 broad truncate scales, almost united into a fringed cup, and 1 or more, frequently 2 rigid bristles or awns, barbed at the end only.—DC. Prod. v. 302.

Queensland. Burdekin river, *F. Mueller;* Brisbane river, Moreton Bay, *Leichhardt, W. Hill.*

N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown* and others; New England, *C. Stuart;* Macleay and Clarence rivers, *Beckler;* head of the Gwydir, *Leichhardt.*

2. **C. cuneifolia,** *R. Br. in Bot. Reg. t.* 504. An erect or spreading branching perennial, rarely attaining 1 ft., more or less hoary, scabrous-pubescent or hirsute. Leaves oblong, cuneate or spathulate, sometimes almost orbicular, coarsely toothed, narrowed into a short or long petiole dilated into stem-clasping auricles. Flower-heads hemispherical, becoming globular when in fruit, on terminal peduncles. Involucral bracts oval, oblong or lanceolate, about 2 lines long. Ray-florets long and narrow. Achenes flat, short, obovate. Pappus of 3 rigid barbed bristles or awns, and 2 broad membranous truncate scales, quite distinct, and sometimes a third smaller

one. Disk-achenes abortive. Fruiting-heads forming a globular burr of 3 or 4 lines diameter.—DC. Prod. v. 302; *C. dilatata*, A. Cunn.; DC. l. c.

Queensland. Suttor river, *Thozet*; Burdekin river, *F. Mueller*.

N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown* and others, and in the interior to the Lachlan, Darling and Murray rivers and on to the Barrier Range, *A. Cunningham*, *Victorian Expedition*, and others; New England, *C. Stuart*, said to be one of the worst burrs for sheep.

S. Australia. Murray river, *F. Mueller*.

3. **C. glandulosa,** *F. Muell. in Trans. Vict. Inst.* 1855, 129, *and in Hook. Kew Journ.* viii. 146. A perennial with a thick woody stock and diffuse or procumbent branching stems of 6 in. to 1 ft., the whole plant hirsute with short glandular hairs. Leaves petiolate, oblong-cuneate, deeply toothed towards the end, the upper ones narrower and sessile. Flower-heads rather large, with blue or whitish rays. Involucral bracts herbaceous, ovate-lanceolate or lanceolate, the largest fully 3 lines long. Achenes of the ray obovate, tuberculate or muricate, otherwise glabrous. Pappus of about 3 to 6 very unequal rigid awns, usually barbed at the end only, with as many obovate truncate scales.—*Huenefeldia coronopifolia*, Walp. in Linnæa, xiv. 307.

Victoria. Dry grassy ridges of the Snowy River and its tributaries towards Maneroo, *F. Mueller*, *Lhotzky*.

SECTION II. CYMBARIA.—Pappus consisting of 2 or more rigid awns, dilated and united at the base, without scales. Perennials with leafy stems, sometimes appearing annual.

4. **C. cymbacantha,** *F. Muell. in Linnæa*, xxv. 400; *Pl. Vict. t.* 36. Apparently perennial, with ascending stems of about 1 ft., slightly scabrous-pubescent. Lower leaves linear-cuneate or oblong, coarsely toothed, 1 to 2 in. long, narrowed into a long petiole; upper ones smaller, sessile, linear or lanceolate, entire. Involucral bracts ovate. Ray-florets numerous, narrow. Achenes flat, obovate, crowned by 2 rigid divaricate scales, broad and concave, almost boat-shaped at the base, tapering into short rigid barbed awns, the summit of the achene convex within the scales.—Sond. in Linnæa, xxv. 469.

S. Australia. Sandy hills, Crystal Brook, *F. Mueller*; N.E. of Lake Gairdner, *Herb. F. Mueller*.

Var. *pumila*. Under 6 in. high and flowering the first year so as to appear annual, pubescent or hirsute. Flower-heads small. Scales of the pappus not so broad at the base, and tapering into longer, more densely barbed awns.

N. S. Wales. Darling river to Cooper's Creek, *Dallachy*.

5. **C. erinacea,** *Steetz in Pl. Preiss.* i. 424. A glabrous often glaucous perennial, with erect or ascending rigid branching stems of 1 to 2 ft. Leaves not numerous, linear or linear-lanceolate, acute, entire, or the lower ones toothed. Flower-heads of *C. lappulacea*. Involucral bracts oblong or linear, slightly scabrous, 1 to 1½ lines long. Ray-florets yellow (*F. Mueller*). Fruiting-heads 3 to 4 lines diameter. Achenes glabrous, smooth or nearly so, with 3 to 5 awns scarcely barbed and united at the base into a broad open almost cartilaginous cup, often as long as the achene, and the border

sinuate between the awns; the summit of the achene within the cup conical with a few minute bristles.

N. S. Wales. Between Darling river and Cooper's Creek, *Neilson*, *Wheeler.*
Victoria. Wimmera, *Dallachy.*
S. Australia. Spencer's Gulf, *R. Brown*; Holdfast Bay, Port Adelaide, Pfeiffer's Flat, Port Lincoln, Boston Point, *F. Mueller*; in the N.W. interior, *M'Douall Stuart's Expedition.*

W. Australia. Swan River, *Drummond, Preiss, n.* 2427; Gordon and Bowes rivers, *Oldfield.*

Var. *parviflora.* Leaves linear-cuneate, the larger ones acutely toothed from near the base. Flower-heads smaller. Pappus-bristles more numerous, the united base shorter.—Durandoo, *Victorian Expedition.*

Huenefeldia angustifolia, Walp. in Linnæa, xiv. 506, which I have not seen, is, from the description, most probably this species.

SECTION III. ACANTHARIA.—Pappus consisting of several unequal awns, all distinct and usually hispid at the base, sometimes all short.

6. **C. scabiosifolia,** *Sond. and Muell. in Linnæa*, xxv. 471. Hirsute, scabrous or nearly glabrous, the stock densely tufted, with creeping rhizomes or stolons. Radical leaves petiolate, obovate or oblong, coarsely toothed or pinnatifid or sometimes lyrate, often 2 to 3 in. long. Stems ascending or erect, ½ to 1 ft. high, simple or slightly branched, with few smaller more sessile and less divided leaves. Involucral bracts ovate. Ray-florets white or purplish. Achenes softly pubescent. Pappus of about 8 very rigid awns, 3 or 4 larger ones much thickened at the base and divaricate but very unequal, the alternating smaller ones sometimes minute or wanting.—*C. Muelleri*, Sond. in Linnæa, xxv. 470 (more glabrous with narrower leaves).

N. S. Wales. Darling river, *Victorian Expedition.*
Victoria. Avoca river and Geelong, *F. Mueller*; Wimmera, *Dallachy.*
S. Australia. Pastures, Walpena and Cuanaka, *F. Mueller.*

Var. *lasiocarpa*, F. Muell. Leaves more rigid, less toothed. Flower-heads and achenes larger.—Snowy and M'Alister rivers and Maneroo, *F. Mueller.*

Var. *pubescens*, F. Muell. Softly villous. Leaves cuneate, toothed at the end only. Flower-heads as in the last variety. Mountains on the Mitta-Mitta river, *F. Mueller.*

Var. *integrifolia*, F. Muell. Nearly glabrous. Radical leaves narrow, mostly linear, rigid, entire; stem leaves entire or toothed. Flower-heads large. Involucral bracts broad. —Blue Mountains, *A. Cunningham* and others; grassy mountains on the Macalister river and Black Forest, *F. Mueller.*

Var. *elongata.* An apparently etiolated form, the radical leaves 6 in. long or more, with a few remote teeth or lobes. Stems almost filiform, with 1 or 2 long 1-headed branches. —Port Phillip, *F. Mueller.*

Var. (?) *cuneata*, *F. Muell.* Radical leaves cuneate-oblong, more or less toothed. Stems elongated with a few oblong leaves and 1 to 3 flower-heads.

Queensland. Rockhampton and Keppel Bay, *Thozet*; Burdekin river and desert on the Suttor, *F. Mueller.*

7. **C. scapigera,** *Hook. in Mitch. Trop. Austr.* 75. A small tufted perennial emitting creeping stolons, glabrous or slightly hairy. Radical leaves linear or linear-lanceolate, entire or rarely remotely toothed, narrowed into a petiole of 1 to 3 in. Flower-stems or scapes simple, longer than the leaves, bearing a few small narrow leaves and a single head very much smaller than in *C. scabiosifolia.* Involucral bracts broadly-oblong. Ray-florets

small, whitish. Fruiting-heads about 4 lines diameter. Achenes flat, tubercular or muricate, with 3 to 5 divaricate straight or hooked awns, obversely hirsute and very hairy at the base, and 2 to 5 small soft erect very hairy awns.

N. Australia. Northern base of Newcastle Range, *F. Mueller.* (Rather uncertain, the specimens not good.)
N. S. Wales. Macquarrie river, *Mitchell;* Darling river, *Victorian and other Expeditions.*
Victoria. Murray river, *F. Mueller;* near Lake Hindmarsh, *Werth.*
S. Australia. Murray river, rare, *Wood.*

8. **C. anthemoides,** *F. Muell. in Trans. Phil. Soc. Vict.* i. 44, *and in Hook. Kew Journ.* viii. 147. A tufted perennial, emitting creeping stolons and quite glabrous. Radical leaves on long petioles, with numerous linear pinnatifid or entire segments, often 3 to 4 in. long. Flowering-stems or scapes slender, usually simple, exceeding the leaves, with a few small distant, sessile, entire, lanceolate, leafy bracts. Involucral bracts few, broadly ovate or orbicular, glabrous except the slightly ciliate margins. Ray-florets whitish. Achenes flat, obovate, nearly glabrous. Pappus of 6 to 8 rather short unequal awns, hispid at the base, but not seen ripe.

Victoria. Muddy localities near Station Peak, *F. Mueller;* Skipton, *Whan.* In the flower-head I examined I found the disk-achenes abortive, as usual in the genus.

9. **C. lappulacea,** *Benth. in Hueg. Enum.* 60. A perennial, sometimes almost woody at the base, with numerous erect or ascending slender branching stems of ½ to 1 ft., more or less hirsute especially in the lower part, rarely entirely glabrous. Lower leaves oblong-cuneate and often toothed or lobed, upper ones linear and entire, sometimes all under ¼ in., sometimes those in the middle of the stems ½ in. long. Flower-heads small, when in fruit scarcely 3 lines diameter. Involucral bracts linear-lanceolate or oblong, sometimes slightly cuneate, ciliate and hispid. Ray-florets yellow (*F. Mueller*), small and narrow. Achenes muricate. Pappus of 1 to 4 rigid barbed awns about 1 line long and 1 or more very short ones, all hirsute at the base, the total number varying from 4 to 8.—Sond. in Linnæa, xxv. 470.

Queensland. Broad Sound, *R. Brown;* Condamine river, *Leichhardt;* Burdekin river and Suttor desert, *F. Mueller;* Rockhampton, *Dallachy;* Maranoa and Belyando rivers, *Mitchell;* Moreton Bay, *C. Stuart.*
N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown;* Lachlan river and Bathurst, *A. Cunningham;* Glendon, *Leichhardt;* New England, *C. Stuart;* Darling and Murray rivers, *Dallachy.*
Victoria. Snowy River, *F. Mueller.*
S. Australia. Flinders Range and Torrens river, *F. Mueller.*
W. Australia. *Burges* in Herb. Hooker.
C. polyseta, Sond. in Linnaea, xxv. 470, from Cudnaka, appears to be a very slight variety of *C. lappulacea*, with rather larger flower-heads.

10. **C. microcephala,** *Benth.* An erect much-branched undershrub not exceeding 6 to 8 in., more or less hoary-hirsute. Leaves oblong-cuneate, obtuse, entire or toothed, under ½ in. long, those of the branchlets much smaller. Flower-heads scarcely 1½ lines diameter. Involucral bracts narrow-oblong, obtuse. Fruiting-heads scarcely more than hemispherical,

and not 2 lines diameter. Achenes hirsute, obovate, flat but not winged. Pappus of 6 to 8 barbed awns, nearly equal, and all shorter than the achene.

N. S. Wales. Murray and Darling rivers, *Herb. F. Mueller.*

11. **C. breviseta,** *Benth. in Hueg. Enum.* 60. An erect perennial of ½ to 1 ft., or sometimes more, diffuse with slender stems of 1 to 2 ft. Leaves linear, obtuse, entire, or some of the lower ones linear-cuneate and coarsely toothed. Flower-heads very small, on slender peduncles. Involucral bracts numerous, linear, mostly acute, scarcely 1 line long. Ray-florets white. Achenes ovate, shortly hispid, not 1 line long, bordered by a narrow flat edge almost expanded into a wing. Pappus of 5 to 10 or even more little rigid barbed awns, usually much shorter than the achene.—*C. tropica*, F. Muell. in Trans. Phil. Inst. Vict. iii. 58.

N. Australia. Upper Victoria river and barren plains, Fitzmaurice river, *F. Mueller;* Albert river, *Henne.*

12. **C. plumulifera,** *F. Muell. in Trans. Phil. Inst. Vict.* iii. 57. An annual with erect or ascending stems, rarely 6 in. high, glabrous or hirsute. Leaves oblong-lanceolate or cuneate, entire or with a few coarse teeth. Involucres 2 to 2½ lines diameter, the bracts oblong, obtuse or almost acute. Ray-florets very numerous, white. Fruiting-heads about 3 lines diameter. Achenes bordered by densely ciliate wings, and so covered by long mostly plumose hairs as to conceal their form. Pappus of several fine barbed awns, unequal, but mostly about the length of the achene.—*Goniopogon multicaule*, Turcz. in Bull. Mosc. 1851, i. 174. t. 2.

N. S. Wales. Plains of the Murray, *F. Mueller;* from the Darling to the Barrier Range, *Victorian Expedition.*

S. Australia. Cooper's Creek, *A. C. Gregory.*

W. Australia, *Drummond*, 3*rd Coll. n.* 97, 4*th Coll. n.* 215; Irvine river, *Oldfield.*

13. **C. porphyroglossa,** *F. Muell. Herb.* A hispid annual, with erect or ascending stems of about 4 to 5 in. Leaves cuneate or the lower ones petiolate and spathulate, deeply toothed or almost lobed, the upper ones smaller and narrow. Involucres 2 to 2½ lines diameter, the bracts narrow and acute. Ray-florets purple, numerous, very narrow. Fruiting-heads about 4 lines diameter. Achenes shortly hirsute, bordered by rather broad wings, densely ciliate on the edge, but without the long plumose hairs of *C. plumulifera.* Pappus of numerous barbed awns, unequal but all shorter than the achene.

S. Australia. Cooper's Creek, *Murray.* Possibly, according to F. Mueller, a variety only of *C. plumulifera.*

14. **C. pterosperma,** *R. Br. ms.* An erect annual of about 1 ft., pubescent or hirsute when young, at length nearly glabrous. Lower leaves on the young plant obovate or petiolate and spathulate, coarsely toothed, on the older plant all linear and entire or rather broader and toothed at the end. Involucral bracts narrow, acute. Ray-florets numerous, white. Fruiting-heads scarcely 3 lines diameter. Achenes flat, sprinkled with a few short hairs, bordered by a very shortly ciliate wing; pappus of about 8 to 10 very short awns.

N. Australia. Islands of the Gulf of Carpentaria, *R. Brown.*

SECTION IV. CHEIROLOMA.—Ray-florets scarcely exceeding the pappus. Disk-florets fertile. Pappus consisting of several unequal awns, alternating with very short entire or lobed bristles or scales.

15. **C. hispidula,** *F. Muell. in Trans. Vict. Inst.* 1855, 130. A hispid annual, with procumbent or rarely erect branching stems of 3 to 6 in. Lower and radical leaves petiolate, obovate spathulate or cuneate, upper ones oblong-lanceolate, toothed towards the end or entire. Peduncle short. Involucral bracts ovate-lanceolate or oblong, hispid or almost muricate. Ray-florets few and very small, the ligula scarcely exceeding the pappus; disk-florets numerous, also small and all fertile. Fruiting-heads 3 to 4 lines diameter. Achenes quite similar in the ray and in the disk, flattened with thick obtuse margins, slightly hispid; pappus of about 4 to 6 rigid divaricate more or less barbed unequal bristles, alternating with as many much shorter bristles or scales either subulate and entire or palmately 3-fid or sometimes spathulate, and all hispid.—*Cheiroloma hispidulum*, F. Muell. in Linnæa, xxv. 401; Sonder in Linnæa, xxv. 473.

N. S. Wales. Molle's Plains, *A. Cunningham;* Upper Bogan and Lachlan rivers, *L. Morton;* Darling river to the Barrier Range, *Victorian Expedition;* between Stokes Range and Cooper's Creek, *Wheeler.*

Victoria. Wimmera, *Dallachy.*

S. Australia. Crystal Brook and Cudnaka, *F. Mueller.*

W. Australia. Swan River, *Drummond, 1st Coll. and n.* 375; Champion Bay, *Walcott.*

19. LAGENOPHORA, Cass.

(Ixauchenus, *Cass.;* Solenogyne, *Cass.;* Emphysopus, *Hook. f.*)

Involucre nearly hemispherical, the bracts in about 2 rows, nearly equal, broad or narrow, with dry or scarious margins. Receptacle convex, without scales. Florets of the ray numerous, female, ligulate or short and tubular. Disk-florets numerous, hermaphrodite, tubular, with a more or less dilated limb, 5-toothed. Anthers obtuse at the base. Style-branches in the disk-florets somewhat flattened, but long and slender, papillose outside at least in the upper portion. Achenes compressed, abruptly contracted at the top either very shortly or into a distinct neck. Pappus none.—Small perennial herbs, with a tufted stock, radical leaves and leafless simple scapes, or rarely the scapes growing out into simple stems decumbent and leafy at the base. Flower-heads terminal, the ray white or purplish.

A small genus, chiefly Australian, but extending also to New Zealand and many parts of tropical Asia. Of the four Australian species, one appears to be the same as the Asiatic one, the other three are endemic.

Ray-florets ligulate, linear, longer than the involucre and spreading.
  Flower-heads without the ray not above 4 lines diameter. Involucral bracts narrow . . . . 1. *L. Billardieri.*
  Flower-heads without the ray nearly 6 lines diameter. Involucral bracts broad . . . . 2. *L. Huegelii.*
Ray-florets not exceeding those of the disk.
  Scapes slender, mostly much longer than the leaves. Ray-florets all tubular, 3-toothed . . . . 3. *L. solenogyne.*

Scapes thickened, shorter or rarely longer than the leaves. Ray-florets minute, mostly opening out into a short concave ligula . . . . 4. *L. emphysopus.*

1. **L. Billardieri,** *Cass., DC. Prod.* v. 307. A perennial with a short thick stock and slender creeping rhizomes, otherwise stemless with radical leaves and scapes, or the stems shortly decumbent and leafy at the base. Leaves from obovate to cuneate-oblong, obtuse, irregularly toothed or shortly lobed, narrowed into a petiole, usually all under 2 in. long, rarely above 3 in. Scapes slender, simple, from 2 or 3 in. to nearly a foot long. Involucre from under 3 to nearly 4 lines diameter, the bracts rather numerous, linear or oblong, acute or rather obtuse. Ray-florets blue, ligulate, exceeding the involucre. Achenes at least as long as the involucre, the margins usually glandular-pubescent, contracted at the base and abruptly contracted at the top into a neck sometimes as long as the breadth of the achene, sometimes very short.—Hook. f. Fl Tasm. i. 188; *Bellis stipitata*, Labill. Pl. Nov. Holl. ii. 55. t. 205; *Ixauchenus sublyratus*, Cass.; DC. Prod. v. 308; *Brachycome pumila*, Walp. Rep. ii. 584, according to Steetz in Pl. Preiss. i. 428; *Lagenophora gracilis*, Steetz in Pl. Preiss. i. 431.

Queensland. Brisbane river, Moreton Bay, *F. Mueller, Leichhardt.*

N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown, Sieber, n.* 505, and others; Clarence, Macleay, and Hastings river, *Beckler.*

Victoria. In marshy places and common along streams in subalpine situations throughout Gipps' Land, and thence to the Grampians, the Yarra and Glenelg rivers, *F. Mueller, Robertson*, and others.

Tasmania. Port Dalrymple, *R. Brown*; abundant throughout the island, *J. D. Hooker.*

S. Australia. Mount Gambier, Rivoli Bay, *F. Mueller.*

W. Australia. King George's Sound, *Menzies*; Swan River, *Drummond*, 1*st Coll.*; Gordon river, *Oldfield.*

The species is also in Ceylon, Khasya, the Indian Archipelago, and S. China. There are generally two distinguishable varieties:—1. *macrocephala*, glabrous or hirsute, the flower-heads without the rays scarcely 3 lines diameter and the rays short, the most common tropical and subtropical form, and, 2. *normalis*, usually hirsute, the flower-heads without the rays about 4 lines diameter and the rays rather longer; this is most abundant in the southern districts. Labillardière's own specimens are almost intermediate between the two.

Of *L. montana*, Hook. f. in Hook. Lond. Journ. vi. 113, and Fl. Tasm. i. 189, the original specimens, with small narrow nearly glabrous leaves, are intermediate in the size of the flower-heads, but many specimens, especially from Victoria, pass gradually into the normal form. *L. latifolia*, Hook. f. in Hook. Lond. Journ. vi. 113, and Fl. Tasm. i. 189. t. 49 A, with small obovate hirsute leaves, passes also gradually into the normal form. In R. Brown's herbarium is a remarkable variety from Port Phillip, with elongated leafy stems and the involucral bracts very narrow, almost setaceous.

2. **L. Huegelii,** *Benth. in Hueg. Enum.* 59. Very near *L. Billardieri*, but a larger and coarser plant, hirsute or sometimes nearly glabrous. Leaves oblong or obovate-oblong, sinuate-toothed or almost pinnatifid, 2 to 4 in. long. Scapes ½ to 1½ ft. long, often with a few leaves near the base. Flower-heads nearly ½ in. diameter without the rays, the bracts, especially the inner ones, broader and more obtuse than in *L. Billardieri.* Achenes glabrous or sprinkled with short hairs both in the eastern and western specimens.—Steetz in Pl. Preiss. i. 430; *L. Gunniana*, Steetz l. c. 431; Hook. f. Fl. Tasm. i. 189. t. 49 B.

Victoria. Yarra river, *F. Mueller*, Wendu vale, *Robertson.*

Tasmania. Abundant in pastures, Launceston, Macquarrie plains, etc., *J. D. Hooker*, *Gunn.*

S. Australia. Lofty Ranges, *F. Mueller.*

W. Australia. Swan River to King George's Sound, *Drummond*, *n.* 60, 377, *Huegel*, *Preiss*, *n.* 118, and others.

3. **L. solenogyne,** *F. Muell. Fragm.* v. 62. Glabrous or hirsute. Radical leaves from obovate to oblong-cuneate, obtuse, 1 to 2 in. long, toothed at the end or above the middle, narrowed into a distinct petiole. Scapes filiform, much longer than the leaves, usually with a few distant small narrow-linear leaves. Flower-heads scarcely above 2 lines diameter when in flower, nearly 3 lines when in fruit. Involucral bracts oblong, obtuse, with scarious often denticulate or ciliate margins. Ray-florets numerous, all apparently erect, tubular, and 3-toothed, not longer than the disk. Achenes narrow, flat, with thickened margins, contracted at the base, terminating in a very short conical but obtuse and callous point.—*Solenogyne bellioides*, Cass.; DC. Prod. v. 367 (from the character given); *S. brachycomoides*, F. Muell. Fragm. v. 62.

Queensland. Brisbane river, *F. Mueller* (a single specimen in fruit only, and therefore doubtful).

N. S. Wales. Port Jackson, *R. Brown;* New England, *C. Stuart.*

4. **L. emphysopus,** *Hook. f. Fl. Tasm.* i. 189. Very hirsute or nearly glabrous. Leaves all radical, densely tufted, oblong, obtuse, narrowed at the base, 1½ to 3 in. long. Scapes very little exceeding the leaves, rather thick and often constricted under the head, leafless or with 1 or 2 very small leafy bracts. Involucre about 2 lines diameter when in flower, 3 lines when in fruit, the bracts oblong, obtuse, with scarious margins. Ray-florets very numerous and short, apparently tubular when in bud, but opening out into a short, concave, 2- or 3-toothed ligula. Achenes of the disk abortive, those of the ray as long as the involucre, narrow, flat, contracted at the base and very shortly so at the top, but without the distinct neck of *L. Billardieri.*—*Emphysopus Gunnii*, Hook. f. in Hook. Lond. Journ. vi. 113; *Solenogyne bellioides*, Sond. in Linnæa, xxv. 480, F. Muell. Pl. Vict. t. 37, but scarcely of *Cassini.*

N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown*, *Woolls*, and others; New England, *C. Stuart;* Clarence river, *Beckler.*

Victoria. Snowy plains on Limestone river and pastures, Bugle Range, *F. Mueller;* Wendu valley, *Robertson.*

Tasmania. Common in various parts of the colony, *Gunn.*

20. BRACHYCOME, Cass.

(Brachystephium, *Less.;* Paquerina, *Cass.;* Steiroglossa, *DC.;* Silphiospermum, *Steetz.*)

Involucre usually hemispherical, the bracts in about 2 rows, nearly equal, broad or narrow, with dry or scarious margins. Receptacle convex or conical, without scales. Florets of the ray female, ligulate, numerous, but usually in a single row. Disk-florets numerous, hermaphrodite, tubular, with a more or less dilated limb, 5-toothed. Anthers obtuse at the base. Style-branches in the disk-florets somewhat flattened, with lanceolate or triangular tips or appendages, papillose outside. Achenes usually compressed when young, when

ripe either flat with obtuse or acute or winged margins, or thick and obtusely 4-angled. Pappus consisting of a ring of short scale-like bristles, or scarcely perceptible or none at all.—Herbs either tufted with 1-headed scapes, or annuals or perennials with erect or ascending branching stems. Leaves alternate, entire toothed or divided. Flower-heads terminal, the ray white blue or purplish, very rarely yellow.

Besides the Australian species, which are all endemic, there are only three from New Zealand. The genus is, however, nearly allied to *Bellis*, a group confined to the northern hemisphere, to which F. Mueller proposes to reunite it. The majority of the Australian species, however, differ in habit; they are all distinguished by the dry or scarious margins of the involucral bracts, and most of them by other more trifling characters.

SECTION I. **Brachystephium.**—*Ray inconspicuous. Achenes often compressed, especially when young, but with thickened margins, never winged, and sometimes at length as thick as broad. Pappus conspicuous, stellately spreading. Involucral bracts usually broadly scarious.*

- Perennial, with stout erect or ascending stems nearly simple. Lower leaves pinnatifid. Flower-heads large . . . . 1. *B. diversifolia.*
- Small erect branching perennial. Leaves cuneate, mostly toothed or lobed. Flower-heads small . . . . 2. *B. melanocarpa.*
- Small glabrous perennial, with creeping rhizomes. Leaves radical, linear, entire or pinnate. Scapes simple. Flower-heads small . 3. *B. radicans.*
- Small annuals. Flower-heads small, with few very small ray-florets.
  - Stem branched and leafy. Achenes glabrous, with 4 obtuse transversely crenate angles . . . . 4. *B. goniocarpa.*
  - Leaves radical, scape simple. Achenes smooth, with 2 thick corky angles, obtuse but bordered by a line of long woolly hairs, and 2 angles narrow and glabrous . . . . 5. *B. pachyptera.*

SECTION II. **Paquerina.**—*Ray conspicuous. Achenes often compressed, especially when young, but with thickened margins, never winged, and sometimes at length as thick as broad. Pappus minute or none.*

- Glabrous annuals, with narrow leaves. Ray-achenes different from those of the disk. Western species.
  - Stems erect and branching. Leaves mostly pinnate . . . . . 6. *B. iberidifolia.*
  - Stems simple or slightly branched at the base. Leaves entire or rarely toothed at the end . . . . 7. *B. pusilla.*
- Slender, decumbent, glandular-pubescent, branching annual (or rarely perennial?). Leaves mostly obovate, toothed or lobed. Eastern species . . . . 8. *B. microcarpa.*
- Perennials, glabrous (except *B. angustifolia*). Leaves narrow, entire or pinnate.
  - Stock tufted.
    - Leaves all radical. Scapes simple, leafless or nearly so.
      - Leaves pinnate . . . . 9. *B. Stuartii.*
      - Leaves linear or lanceolate, entire . . . . 10. *B. scapigera.*
  - Stems decumbent or ascending, simple or with few divaricate branches, leafy at the base.
    - Leaves long, narrow, deeply pinnatifid . . . . 11. *B. Muelleri.*
    - Leaves small, linear, obtuse, entire . . . . 12. *B. parvula.*
  - Stems decumbent or creeping at the base. Leaves entire.
    - Achenes rather broad, with thick edges and concave sides.
      - Glabrous. Leaves thin. Pappus none . . . . 13. *B. graminea.*
      - Usually slightly glandular-pubescent. Leaves rigid. Pappus minute . . . . 14. *B. angustifolia.*
    - Achenes narrow, with thick margins and flat sides.

Plant glabrous. Leaves thin. Pappus minute . . . . . . 15. *B. linearifolia.*
Stems erect, rigid. Leaves entire, mostly lanceolate . . . . . . 17. *B. basaltica.*
Stems slender, erect or slightly decumbent at the base, branched.
Leaves narrow, entire or pinnate. Achenes narrow . . . . . 18. *B. trachycarpa.*
Stems decumbent, branching, often woody at the base. Leaves toothed, pinnatifid or pinnate.
Pappus minute or scarcely any. Leaves all petiolate, acutely toothed or lobed.
Western species. (Disk-achenes with acute margins?) . . . 28. *B. Billardieri.*
Eastern species. Achenes all with obtuse edges . . . . . . 16. *B. heterophylla.*
Pappus conspicuous. Eastern species. (See the last three species of Sect. III.)

SECTION III. **Brachycome.**—*Ray conspicuous. Achenes flat, the margins obtuse, acute or winged. Pappus conspicuous.*

Small annuals, branching at the base. Leaves often lobed or pinnate.
Glabrous or pubescent. Achenes narrow, not winged . . . . . 19. *B. exilis.*
Glabrous. Achenes rather broad, but not winged . . . . 20. *B. ptychocarpa.*
Pubescent or hirsute. Achenes broadly winged . . . . 21. *B. debilis.*
(See also *B. ciliaris*, which the first year has the appearance of an erect corymbose annual.)
Perennials. Leaves all or mostly radical. Scapes leafless or with few leaves, 1-headed.
Achenes not winged. Leaves all radical, obovate or oblong, entire or crenate . . . . 22. *B. decipiens.*
Achenes winged. Scapes sometimes with a few leaves.
Leaves linear, entire . . . . 23. *B. cardiocarpa.*
Leaves once or twice pinnate, with pinnatifid segments . . . 24. *B. nivalis.*
Leaves cuneate-oblong, entire or crenate.
Glabrous or nearly so . . . . 25. *B. scapiformis.*
Hirsute. Stems, when full-grown, several-headed.
Leaves obtusely toothed or lobed . . . . 26. *B. stricta.*
Leaves acutely toothed or lobed . . . . 27. *B. heterodonta.*
Branching perennials with more or less leafy stems. Achenes (at least those of the disk) winged or acutely bordered.
Leaves mostly pinnate, with linear segments. Stems, the first year, erect and corymbose, afterwards ascending . . . . 29. *B. ciliaris.*
Leaves oblong or cuneate, toothed or lobed.
Glabrous, glandular-pubescent or hirsute.
Lobes or teeth of the leaves very acute.
Eastern species. Achenes winged . . . . 27. *B. heterodonta.*
Western species. Achenes acutely bordered, but not winged . . . . 28. *B. Billardieri.*
Lobes or teeth of the leaves obtuse or scarcely acute . . . 26. *B. stricta.*
Stems woolly, at least when young. Leaves narrow . . . . 30. *B. calocarpa.*
Leaves mostly linear, entire. Ray-florets yellow . . . . 31. *B. marginata.*
Branching decumbent perennials, with more or less leafy stems. Achenes very flat, but with obtuse edges, not winged.
Leaves thin, obovate or cuneate-oblong, entire or toothed at the end, sessile, except the lower ones . . . . 32. *B. Sieberi.*
Leaves thick, obovate or oblong, all petiolate, coarsely crenate or pinnatifid . . . . 33. *B. discolor.*
Leaves once or twice pinnatisect or deeply pinnatifid, with narrow or rarely cuneate lobes . . . . 34. *B. multifida.*

SECTION IV. **Silphiosperma.**—*Ray-florets not exceeding the involucre. Achenes flat, with an entire or toothed wing. Pappus none. Small annuals.*

Glandular-pubescent, 3 to 6 in. high. Involucral bracts narrow.

Achene-wings entire or slightly toothed . . . . 35. *B. glandulosa.*
Glabrous, ½ to 2 in. high. Involucral bracts broad. Achene-wings conspicuously toothed . . . . 36. *B. collina.*

B. dentata, Gaud. in Freyc. Voy. Bot. 468, too imperfectly described for identification, is referred by DC. with doubt to *Vittadinia.*

SECTION I. BRACHYSTEPHIUM.—Achenes often compressed, especially when young, but with thickened margins, never winged, and sometimes at length as thick as broad. Pappus conspicuous, stellately spreading. Involucral bracts usually broadly scarious.

This section differs from *Paquerina* chiefly in the pappus; the achenes are also more generally thick when ripe, and the outer ones especially often thickened unequally at the top, turning inwards, the pappus becoming quite excentrical.

1. **B. diversifolia,** *Fisch. and Mey. Ind.* ii. *Sem. Hort. Petrop.* 31. A tufted perennial, flowering however the first year so as to appear annual, glabrous or hirsute with septate hairs. Stems usually simple, 1 to 2 ft. high or rarely reduced to a short scape. Lower leaves often crowded, obovate spathulate or oblong, coarsely toothed or pinnatifid, the lobes broad or narrow, sometimes again divided, the upper leaves smaller and less divided, and the upper part of the stem a long almost leafless peduncle. Flower-heads larger than in any other species. Involucre above ½ in. diameter, the scarious margins of the bracts broad. Ray-florets white, long and numerous. Style-branches with a lanceolate papillose appendage, but without the longer hairs at the base figured by Lessing (Syn. Comp. f. 16). Achenes oblong, thickened upwards, marked with longitudinal furrows, the outer ones obliquely incurved at the top, with a dense tuft of short capillary bristles.—Hook. f. Fl. Tasm. i. 187; *Pyrethrum diversifolium*, Grah. in Hook. Exot. Fl. iii. t. 215; Bot. Reg. t. 1025; *Brachystephium leucanthemoides*, Less. Syn. Comp. 389; DC. Prod. vi. 304.

N. S. Wales. Port Jackson, *R. Brown*; Clarence river, *Beckler* (with smooth and with tuberculate achenes).

Victoria. On the Yarra, *F. Mueller, Robertson*; in the Australian Alps, *F. Mueller*; Wimmera, *Dallachy.*

Tasmania. Port Dalrymple, *R. Brown*; common in grassy pastures throughout the island, *J. D. Hooker.*

S. Australia. Near Adelaide, *Blandowski.*

Var. *humilis.* Very small in all its parts, but not otherwise different, probably a starved state.—*Steiroglossa humilis*, DC. Prod. vi. 39. Lachlan river, *A. Cunningham.*

Var. *maritima.* Leaves mostly twice pinnatifid, rather thick. Scapes short.—Islands of Bass's Straits, *R. Brown.*

2. **B. melanocarpa,** *Sond. and F. Muell. in Linnæa*, xxv. 476. A small perennial, but evidently flowering the first year so as to appear annual, erect, slightly branched, rarely much above 6 in. high. Leaves mostly oblong-cuneate, obtuse and coarsely toothed at the end or shortly lobed above the middle, narrowed into a rather long petiole. Flower-heads small, on slender peduncles. Involucral bracts broad, scarious at the end. Ray-florets rather numerous. Achenes narrow-obovate, somewhat compressed, the edges obtuse, the sides often tuberculate, usually very black. Pappus of short bristles stellately spreading.

N. S. Wales. Darling river, *Victorian Expedition.*

Victoria. Murray river, *F. Mueller.*

3. **B. radicans,** *Steetz in Pl. Preiss.* i. 429. A glabrous slender perennial, with a tufted stock, emitting slender creeping rhizomes. Leaves radical, narrow-linear, entire or with a very few linear lobes, rarely under 1 in. and often 3 or 4 in. long. Scapes simple, slender, from 3 or 4 in. to nearly 1 ft. long, leafless or with 1 or 2 small leaves, rarely decumbent and leafy at the base. Flower-heads not very small, the involucral bracts rather broad, with broad scarious margins. Achenes striate, bordered by a broad thick obtusely crenate margin. Pappus of very short stellately spreading bristles.—Hook. f. Fl. Tasm. i. 184.

Victoria. Wet grassy places, near Omeo, *F. Mueller.*
Tasmania. Marshy places, Marlborough, South Esk river, etc., *Gunn.*

4. **B. goniocarpa,** *Sond. and F. Muell. in Linnæa,* xxv. 471. A small, diffuse, much-branched annual, rarely exceeding 3 in., glabrous or sprinkled with septate hairs. Leaves linear or linear-cuneate, the lower ones usually pinnatifid, the upper ones shortly lobed or toothed at the end or entire. Flower-heads not 3 lines diameter, very convex after flowering. Involucral bracts obovate, concave. Ray-florets few and very small; disk-florets very numerous, the corolla minute. Achenes thick, oblong-cuneate, more or less angular, with obtuse rugose angles; the outer achenes incurved at the end. Pappus of the outer florets very oblique, that of the disk stellately spreading.

Victoria. Wimmera, *Dallachy.*
S. Australia. Murray river, Burra-Burra mines, *F. Mueller.*
W. Australia, *Drummond, 5th Coll. n.* 391.

5. **B. pachyptera,** *Turcz. in Bull. Mosc.* 1851, i. 175. A small, apparently stemless, but densely tufted annual. Leaves radical, linear, 3-lobed or shortly pinnate above the middle, with linear segments. Scapes leafless, 2 to 4 in. high. Involucres 3 to 4 lines diameter, the bracts very obtuse and broadly scarious. Receptacle small. Achenes numerous, slightly compressed, with thick almost corky edges, bordered by a longitudinal line of long woolly hairs, and with a narrow acutely prominent glabrous ridge on each side. Pappus of short scaly bristles,

N. S. Wales. Molle's Plains, *Fraser;* Darling river, *Victorian Expedition;* Murray river, *Dallachy.*
S. Australia. Murray river, *F. Mueller.*
W. Australia. Between Swan River and King George's Sound, *Drummond, 4th Coll. n.* 205.

SECTION II. PAQUERINA.—Achenes often compressed, especially when young, but with thickened margins, never winged, and sometimes as thick as broad. Pappus minute or none.

6. **B. iberidifolia,** *Benth. in Hueg. Enum.* 59. An erect, glabrous, corymbosely branched annual, about 1 ft. high. Leaves pinnately divided into narrow-linear segments. Involucral scales oblong, with narrow scarious margins. Ray-florets blue or rarely white, rather large. Achenes of the disk more or less angular or furrowed, sometimes slightly flattened, without wings, those of the ray usually much larger, thicker, sometimes almost corky. Pappus very minute or none.—Bot. Reg. 1841. t. 9; Bot. Mag. t. 3876; Steetz in Pl. Preiss. i. 425; *B. capillacea,* Walp. Rep. ii. 584 (according to Steetz); *Sleiroglossa chamæmillifolia,* DC. Prod. vi. 39.

W. Australia. King George's Sound, *A. Cunningham*, and thence to Vasse and Swan rivers, *Huegel*, *Drummond*, 1*st Coll.*, 5*th Coll. n.* 371, *Preiss*, *n.* 94, 95, 96, 97, and others.

Var. *diffusa*. More branching from the base. Achenes apparently flatter, but not seen ripe.—Murchison river, *Oldfield*.

7. **B. pusilla,** *Steetz in Pl. Preiss.* i. 427. A slender glabrous annual, with erect or ascending stems, simple or slightly branched, not exceeding 6 in., including the peduncle. Leaves radical or in the lower part of the stem, narrow-linear, obtuse, entire or very rarely with 1 or 2 teeth, or very short lobes, the upper part of the stem a long leafy peduncle. Flower-heads of *B. iberidifolia*, but usually smaller. Achenes smaller than in *B. iberidifolia*, those of the disk more or less flattened with thickened edges, those of the ray less flattened, the margins much less prominent. Pappus none or very minute, sometimes rather more conspicuous on the ray-achenes.—*B. bellidioides*, Steetz in Pl. Preiss. i. 426.

W. Australia. Swan River, *Drummond*, 5*th Coll. n.* 373; *Preiss*, *n.* 86, 88, 89; *Oldfield*; Murray and Murchison rivers, *Oldfield*.

This has the foliage and stature of *B. parvula*, but appears to be constantly annual, and the achenes are all narrower. It may prove to be a reduced variety of *B. iberidifolia*, with undivided leaves. The distinction established by Steetz between his two species was owing to his having described the achenes of the ray in his *B. bellidioides*, and those of the disk in his . *pusilla*.

8. **B. microcarpa,** *F. Muell. Fragm.* i. 50. A more or less pubescent annual, sometimes very small and branched, like *B. exilis*, the ascending or decumbent stems sometimes lengthening out to near a foot. Leaves petiolate, obovate or almost orbicular, obtusely and coarsely toothed or lobed, under 1 in. long, or when luxuriant lyrate and nearly 2 in. Flower-heads small, like those of *B. exilis*, on long slender peduncles. Achenes obovate, very flat, with thickened margins, sprinkled with a few hairs or tuberculate on the sides. Pappus very small.

Queensland. Burnett river, *F. Mueller*; Wide Bay to Moreton Bay, *Leichhardt*; Brisbane river, Moreton Bay, *Fraser*, *F. Mueller*; Cape river, *Bowman*.

N. S. Wales. New England, *C. Stuart*; Clarence river, *Beckler*; Richmond river, *Fawcett*.—The achenes are sometimes very much like those of *B. melanocarpa*, but flatter, with a much smaller pappus.

9. **B. Stuartii,** *Benth.* A small glabrous perennial, with a thick tufted or shortly creeping rootstock. Leaves radical, pinnate, with narrow, cuneate, entire toothed or lobed segments, the lower ones small and distant. Scapes leafless, slender, 3 to 6 in. high. Flower-head rather small. Involucral bracts broadly oblong. Receptacle very conical. Achenes small, black, rather narrow, slightly flattened, but thick, with obtuse edges, not winged, more or less tuberculate on the sides. Pappus minute.

N. S. Wales. New England, *C. Stuart*.

10. **B. scapigera,** *DC. Prod.* vii. 277. A glabrous perennial, with a densely tufted stock. Leaves radical, often surrounded at the base by the fibre-like remains of old leaves, oblong or linear-lanceolate, narrowed into a long petiole of a rather thick texture, quite entire. Scapes leafless or with 1 or 2 small leaves, 3 to 6 in. high or when luxuriant rather more. Flower-

head not large. Involucral bracts obtuse and rather broadly scarious. Achenes compressed, but with obtuse edges, not at all winged. Pappus very small.—*Senecio scapiger*, Sieb. in Spreng. Syst. iii. 559; *Brachystephium scapigerum*, DC. Prod. vi. 304.

N. S. Wales. Port Jackson or Blue Mountains, *Sieber, n.* 332.

Victoria. Grassy valleys, Buffalo Range, Delatite river, Cobberas Mountains, *F. Mueller.*

11. **B. Muelleri,** *Sond. in Linnæa*, xxv. 475. Glabrous, tufted at the base, and probably perennial. Stems decumbent, simple and single-headed or slightly branched, not exceeding 6 in. in our specimens. Leaves in the lower part narrow, 1 to 2 in. long, deeply pinnatifid with short, ovate, mucronate, entire or toothed lobes. Flower-heads not small. Involucral bracts oblong, acuminate. Achenes rather narrow, still young, but apparently with thick obtuse margins and narrow sides, as in *B. pachyptera*, but quite glabrous. Pappus minute or none.

S. Australia. Near Gawler Town, *F. Mueller.*

12. **B. parvula,** *Hook. f. Fl. Tasm.* i. 185. A small glabrous perennial, with a densely tufted stock and diffuse divaricately branched stems, rarely attaining 6 in. Leaves linear or linear-cuneate, obtuse, rather thick, the radical and lower ones occasionally 2- or 3-toothed at the end, but often all entire. Flower-heads rather small. Involucral bracts oblong-cuneate. Achenes flat, broad, with thickened margins, not winged. Pappus minute or none.

Victoria. Sandy banks of the Yarra, *F. Mueller, Harvey, Adamson.*

Tasmania. Flinders' Island, *Milligan.*

This species resembles *B. pusilla* in aspect, but besides the evidently perennial duration, the achenes appear to be the same in the ray as in the disk, and all broader than in *B. pusilla.*

13. **B. graminea,** *F. Muell. Fragm.* i. 49. Slender and usually glabrous; stock perennial, creeping or sometimes tufted. Stems occasionally short and numerous, more frequently elongated, decumbent or erect, leafy at the base only or above the middle. Leaves linear or linear-lanceolate, mostly acute, narrowed into a long petiole. Involucre about 3 lines diameter, the bracts narrow-oblong, obtuse. Ray-florets numerous, narrow. Style-appendages narrow. Achenes as long as the involucre, obovate, compressed, with very thick obtuse callous margins, the somewhat concave sides often tuberculate, and the whole achene sometimes glandular. Pappus none.—*Bellis graminea*, Labill. Pl. Nov. Holl. ii. 54. t. 204; *Paquerina graminea*, Cass.; DC. Prod. v. 307; Hook. f. Fl. Tasm. i. 188.

Victoria. Wet places, Merriman's Creek, Hall's Creek, Goulburn river, Dandenong Mountains, Station Peak, etc., *F. Mueller.*

Tasmania. Port Dalrymple, *R. Brown*; marshy places, not uncommon, *J. D. Hooker.*

S. Australia. From the Murray to St. Vincent's Gulf, *F. Mueller* and others.

14. **B. angustifolia,** *A. Cunn. in DC. Prod.* v. 306. A perennial with a creeping rhizome and ascending or erect stems, sometimes short, sometimes 8 to 10 in. long, leafy at the base, more or less glandular-pubescent especially under the flower-head. Leaves linear or linear-lanceolate, mostly acute, narrowed into a petiole, 1½ to above 3 in. long, rather firm, and the midrib pro-

minent underneath. Flower-heads not large. Involucre very glandular, the scarious margins of the bracts very narrow. Achenes obovate-oblong, flattened but thick, often glandular, with thick callous margins. Pappus very minute, and sometimes quite inconspicuous.—Hook. f. Fl. Tasm. i. 186.

N. S. Wales. Open downs, Goulburn Plains, *A. Cunningham.*
Victoria. Omeo, *F. Mueller.*
Tasmania, *Gunn.*

Although very near *B. graminea*, this species appears to be distinct in the shape of the achenes, as well as in the glandular pubescence and narrow rigid leaves.

15. **B. linearifolia,** *DC. Prod.* v. 306. Glabrous, probably perennial, with slender ascending stems and petiolate leaves, either all linear or the lower ones oblong-lanceolate, all entire, and the specimens closely resembling the slender varieties of *B. graminea*, but the achenes are flat, rather narrow, with thickened margins, and crowned by a very small but distinct pappus.

N. S. Wales. Port Jackson, *A. Cunningham, J. D. Hooker,* and others.

16. **B. heterophylla,** *Benth. in Hueg. Enum.* 60. A glabrous perennial with slender decumbent or ascending branching stems, like those of *B. linearifolia* and *B. Sieberi.* Leaves all petiolate, obovate-cuneate or oblong, with a few very acute teeth or lobes. Flower-heads rather small, on slender peduncles. Achenes flat, rather narrow, with thickened margins, and crowned by a very small but distinct pappus.

N. S. Wales. Port Jackson, *R. Brown.* The specimens are numerous, and show two distinct varieties in foliage, one with broad thin leaves with broad but very acute lobes, the other with narrower, smaller, almost pinnatifid lobes. Both may be varieties of *B. linearifolia*, but the leaves are all toothed and lobed. From *B. Sieberi* they differ in the petioles and acute lobes of the leaves, and the very small pappus.

17. **B. basaltica,** *F. Muell. Fragm.* i. 50. A glabrous and somewhat glaucous perennial, with rigid erect branching stems of 1½ to 3 ft. Lower leaves petiolate, obovate-oblong, the others oblong lanceolate or linear, mostly acute and quite entire, the upper ones few, small, and distant. Peduncles long, somewhat corymbose. Involucral bracts narrow, almost acute. Achenes narrow, at first flat with thickened margins, at length thick, tuberculate, not winged. Pappus very minute.

Queensland, *Bowman*; basaltic plains from Peak range to Darling Downs, *F. Mueller.*

Var. *gracilis.* More slender, 1 to 2 ft. high. Leaves all linear or linear-lanceolate.
Queensland. Rockhampton and Keppel Bay, *Thozet.*
N. S. Wales. Macquarrie marshes, *Mitchell*; Murray and Darling rivers, *Dallachy.*
S. Australia. Tanunda on the Gawler river, *F. Mueller.*

18. **B. trachycarpa,** *F. Muell. in Linnæa,* xxv. 339. A glabrous perennial, erect and corymbosely branched the first year, afterwards with numerous nearly simple or divaricately branched, slender but rigid stems from a more or less woody base. Leaves linear, the lowest often rather broad, entire or pinnately lobed, the stem-leaves mostly narrow and entire. Flower-heads small. Involucral bracts cuneate-oblong, rather broadly scarious at the end. Ray short, lilac. Achenes narrow, with thickened margins, the sides more or less tuberculate, and sometimes hirsute with short hooked hairs. Pappus minute or almost none.

Queensland. Broad Sound, *R. Brown;* Keppel Bay, *Thozet.*
N. S. Wales. Darling river, *Dallachy.*
Victoria. Victoria ranges and Mount Sturgeon, *F. Mueller;* sandy heaths, Glenelg river, *Robertson.*
S. Australia. Lofty Ranges, Cudnaka, Crystal Brook, *F. Mueller.*

SECTION III. BRACHYCOME.—Achenes flat, the margins acute or winged, or in a few species obtuse. Pappus conspicuous.

19. **B. exilis,** *Sond. in Linnæa*, xxv. 473. A slender annual, with erect or ascending branched stems, usually only 2 or 3 in. high without the peduncles, glabrous in the original form. Leaves mostly pinnatifid, with few short linear acute lobes. Peduncles slender, erect, 2 to 4 in. long. Flower-heads small. Involucral bracts few, oblong, scarious. Achenes narrow, with thickened margins, not winged. Pappus at first conspicuous, but when the achene is ripe not longer than its breadth, and sometimes much shorter.—*B. leptocarpa*, F. Muell. in Trans. Phil. Soc. Vict. i. 43, and in Hook. Kew Journ. viii. 147.

N. S. Wales. In the interior, *C. Moore;* Darling river, *Victorian Expedition.*
Victoria. Axe river, Darelin Creek, Esau river, etc., *F. Mueller.*
S. Australia. Lofty and Barossa ranges, Port Lincoln, *F. Mueller.*

Var. (? *scabrida*, Sonder. Larger, more branched, with broader leaves and smaller flower-heads.—Murray river and Kensington, in both cases old and imperfect specimens.

20. **B. ptychocarpa,** *F. Muell. in Trans. Phil. Soc. Vict.* i. 43, *and in Hook. Kew Journ.* viii. 148. A small glabrous annual, very much like the common glabrous form of *B. exilis*, but the involucral bracts appear to be much broader, the receptacle more conical, and the achenes much broader and flatter, intermediate between those of *B. exilis* and of *B. debilis*. The specimens are, however, few and unsatisfactory.—*Steiroglossa lineariloba*, DC. Prod. vi. 39.

N. S. Wales. Lachlan river, *A. Cunningham.*
Victoria. Buffalo range, *F. Mueller.*

21. **B. debilis,** *Sond. in Linnæa*, xxv. 477. A small annual, more or less hirsute, exactly like the scabrous form of *B. exilis*, except that the involucral bracts are rather narrower, and the achenes are bordered by a rather broad wing. Pappus rather long for the genus.

Victoria. Glenelg river, *F. Mueller.*
S. Australia. Kensington, St. Vincent's Gulf, Port Lincoln, *F. Mueller.*

Some very young specimens from the Darling river, *Victorian Expedition*, may possibly belong to this species.

22. **B. decipiens,** *Hook. f. in Hook. Lond. Journ.* vi. 114, *and Fl. Tasm.* i. 184. *t.* 48. An almost stemless perennial, usually glabrous, with precisely the aspect but not the involucre of the European Daisy (*Bellis perennis*). Stock short and tufted. Leaves radical, obovate-oblong, entire or remotely and shortly toothed or crenate, narrowed into a short broad petiole, 1 to 3 in. long. Scapes longer than the leaves, simple and leafless, or with a single small leaf. Heads rather large, the scarious margins of the involucral bracts usually but not always dark coloured. Achenes very flat with a thickened margin, sprinkled with a few short hairs. Pappus very short.

N. S. Wales. Argyle county, *Backhouse, M'Arthur.*

Victoria. Grassy valleys near Mount William, Dandenong range, Plenty Creek, Upper Genoa river, *F. Mueller;* Wendu valley, *Robertson.*

Tasmania. Port Dalrymple, *R. Brown;* abundant in grassy meadows throughout the island, *J. D. Hooker.*

S. Australia. Near Mount Gambier, *F. Mueller.*

Var. *pubescens.* Leaves pubescent, flower-heads smaller.—New England, *C. Stuart.*

23. **B. cardiocarpa,** *F. Muell. Herb.* A glabrous perennial with a tufted stock. Leaves radical, linear, quite entire in all our specimens, and often very narrow and many inches long, but sometimes short and resembling those of *B. scapigera.* Scapes usually erect, often above 1 ft. high, bearing 3 or 4 distant leaves, rarely decumbent and leafy at the base. Flower-heads rather large. Involucral bracts broadly scarious. Achenes flat, bordered by broad thin wings, entire, undulate, or rarely crenate or lobed as in *B. marginata*, the pappus as long as the breadth of the achene or rather more.—*B. linearifolia*, Hook. f. Fl. Tasm. i. 185, not of DC.

Victoria. Swamps of Gipps' Land, *F. Mueller;* Heaths, Glenelg river, *Robertson;* Portland, *Allitt.*

Tasmania. Mount Wellington, Formosa, etc., generally growing in water, *J. D. Hooker* and others.

S. Australia. Rivoli Bay, *C. Mueller.*

Var. *alpina.* Smaller, with shorter leaves.—Baw-Baw, Munyong and Cobra Mountains, Victoria, at an elevation of 4000 to 6000 ft., *F. Mueller.*

24. **B. nivalis,** *F. Muell. in Trans. Phil. Soc. Vict.* i. 43, *and in Hook. Kew Journ.* viii. 148. A glabrous perennial, with a thick tufted or shortly-creeping stock. Leaves radical, pinnate, with once or even twice pinnatifid, or rarely entire linear segments, the whole leaf usually 3 or 4 in. long. Scapes longer than the leaves, simple, leafless. Flower-heads rather large. Involucral bracts narrow. Receptacle at length very conical. Achenes flat, with a broad wing. Pappus conspicuous, the bristles usually united in a ring.

Victoria. Summits of the Australian Alps, Mount Buller and Cobberas mountains (with the leaves mostly simply pinnate), Munyong mountains and Mount Wellington (with the leaves mostly twice pinnate), *F. Mueller.*

25. **B. scapiformis,** *DC. Prod.* v. 306. A perennial with a tufted or slightly-creeping stock, glabrous or nearly so. Radical leaves obovate or oblong-cuneate, coarsely toothed towards the end or rarely nearly entire, narrowed into a petiole, of a thicker consistence than in *B. decipiens.* Flowering-stems 6 in. to 1½ ft. high, sometimes reduced to almost leafless scapes, more frequently leafy below the middle, simple or rarely with a single accessory branch, the leaves smaller and narrower than the radical ones. Flower-heads rather large. Involucral bracts narrow and acute. Achenes flat, the acute edges more or less expanded into a wing. Pappus conspicuous, of short bristles almost dilated into scales.—Hook. f. Fl. Tasm. i. 185.

N. S. Wales. Lachlan river, *A. Cunningham;* Argyle County, *M'Arthur, Backhouse;* Head of the Gwydir, *Leichhardt.*

Victoria. Moist places, summit of the Victoria ranges, *Wilhelmi;* Mount Barkly, Mount Timbertop, Merriman's Creek, etc., *F. Mueller.*

Tasmania. Derwent river, *R. Brown;* abundant in good soil and in marshy places throughout the colony, *J. D. Hooker.*

Var. *tenuiscapa.* A rather small and slender variety with narrow leaves, broader, more obtuse involucral bracts, and in some specimens the immature achenes show no wings; in others they are certainly winged, and some large broad-leaved specimens of *B. scapiformis* have the broad involucral bracts of the *tenuiscapa*.—*B. tenuiscapa*, Hook. f. in Hook. Lond. Journ. vi. 114, and in Fl. Tasm. i. 184. t. 48.—Emu plains, Victoria, *F. Mueller*; Arthur's Lakes and Middlesex plains, Tasmania, *Gunn*.

26. **B. stricta,** *DC. Prod.* v. 305. A perennial with ascending or erect more or less branching stems, attaining 1½ ft. when full-grown, more or less hirsute with short septate hairs or glandular-pubescent, especially under the flower-head, very rarely reduced to short simple scapes. Lower leaves cuneate-oblong, coarsely toothed or almost pinnatifid; upper ones narrow and more entire. Flower-heads rather large, on long peduncles. Involucral bracts narrow as in *B. scapiformis*, but usually more scarious and broader at the end. Achenes very flat, with a broad thin entire or lobed wing. Pappus much smaller than in *B. scapiformis*.—Hook. f. Fl. Tasm. i. 186: *B. leucanthemifolia* and *B. oblongifolia*, Benth. in Hueg. Enum. 60; *B. glauca*, Walp. in Linnæa, xiv. 315.

N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown* and others, and inland to Bathurst, *A. Cunningham*; Mount Mitchell, *Beckler*; Maneroo plains and Argyle county, *Lhotzky*; Twofold Bay, *F. Mueller*.

Victoria. Mount Buller, Mount Timbertop, King's Parrot's Creek, Delatite river, Bacchus Marsh, etc., *F. Mueller*; shady banks, Port Phillip, *Herb. Lemann*.

Tasmania. Port Dalrymple, *R. Brown*; abundant in rocky places throughout the colony, *J. D. Hooker*.

27. **B. heterodonta,** *DC. Prod.* v. 305. A perennial with a tufted stock, emitting creeping stolons and erect or ascending branched stems of 1 to 2 ft. Radical leaves on long petioles, oblong, toothed or pinnatifid, all the teeth or lobes mucronate-acute; stem leaves few, lanceolate or oblong, acute, entire or acutely toothed, all sprinkled, especially underneath, with rather rigid appressed hairs. Flower-heads rather large, on long peduncles. Involucral bracts apparently broad. Achenes (according to DC.) bordered by a toothed wing and tuberculate on the disk.

N. S. Wales. Wet places on the Lachlan river, *A. Cunningham*; N.W. interior, *Fraser*. The specimens are imperfect, but have a different aspect from any other species; the mucronate-acute teeth of the leaves are peculiar.

28? **B. Billardieri,** *Benth.* A perennial, glabrous or hirsute with septate hairs. Stems branched, leafy, apparently decumbent. Leaves cuneate-oblong, pinnatifid with short mucronate-acute lobes. Peduncles 1 to 3 in. long, the flower-heads not large. Involucral bracts oblong. Achenes very flat, oblong, those of the ray apparently with thickened obtuse margins, those of the disk with the margins more acute and slightly ciliate or denticulate, but not seen perfect. Pappus minute or almost none.

W. Australia, *Drummond*, *5th Coll. n.* 371.—*Bellis aculeata*, Labill. Pl. Nov. Holl. ii. 55. t. 206, from Van Leeuwin's Land, appears from the figure and description to agree much better with this species than with *B. stricta*, to which it is commonly referred. Our specimens are not very good, and there may still be some doubt about the species.

29. **B. ciliaris,** *Less. Syn. Comp.* 172. Glabrous or more or less clothed, especially when young, with a white wool, probably always perennial, but often flowering the first year so as to appear annual; stems erect, slender,

under 1 ft. high, somewhat corymbosely branched. Leaves pinnate, with narrow-linear usually very divaricate segments. Flower-heads rather small. Involucral scales very variable in breadth. Achenes of the disk flattened, bordered by a broad entire denticulate or ciliate wing, the faces smooth or tuberculate, those of the ray often more tuberculate and without any wing. Pappus usually conspicuous.—DC. Prod. v. 306; Hook. f. Fl. Tasm. i. 187; *Bellis ciliaris*, Labill. Pl. Nov. Holl. ii. 56. t. 209; *Brachycome Drummondii*, Walp. Rep. ii. 584; Steetz in Pl. Preiss. i. 428.

N. S. Wales. Field's Plains, *Fraser*; Lake George, Argyle county and Illawarra, *A. Cunningham*; Darling desert, *Dallachy*.

Victoria. Mount Buller, *F. Mueller*; Murray desert and Wimmera, *Dallachy*.

Tasmania. Derwent river, *R. Brown*; chiefly in the central districts of the island, *J. D. Hooker*.

S. Australia. South coast, *R. Brown*; from Lake Alexandrina to Spencer's and St. Vincent's Gulf, *F. Mueller*.

W. Australia. Chiefly on the South coast to the east of King George's Sound, *R. Brown*, *Harvey*, *Drummond*, *5th Coll. n.* 387, *Preiss*, *n.* 87, *Maxwell*, and others.

Some specimens, not showing the perennial stock, are very difficult to distinguish from *B. iberidifolia* without the achenes. The flower-heads are, however, usually smaller.

Var. *lanuginosa*. Stems more or less woolly when young.—*B. lanuginosa*, Steetz in Pl. Preiss. i. 427. Darling desert, *Dallachy*, and W. Australia, *Drummond*, *n.* 86, 95, *and 4th Coll. n.* 211; *Preiss*, *n.* 85.

Var. *glandulosa*. More or less glandular-pubescent. Flower-heads small.—S. Australia and W. Australia, *Drummond*, *4th Coll. n.* 210.

Var. *grandiflora*. Flower-heads as large as in *B. iberidifolia* but achenes of *B. ciliaris*.—W. Australia, *Drummond*.

Var. *subdissecta*. Glabrous. Segments of the lower leaves sometimes again lobed.—Victoria and S. Australia.

Var. *robusta*. More rigid, the stems more leafy, about ½ ft. high. Flower-heads rather large, with the involucral bracts often but not always broader and more scarious.—*B. squalida*, Hook. f. in Hook. Lond. Journ. vi. 115; *B. strongylospermoides*, Walp. in Linnæa, xiv. 305; *B. multicaulis*, F. Muell. in Trans. Phil. Soc. Vict. i. 43, and in Hook. Kew Journ. viii. 148; *Steiroglossa rigidula*, DC. Prod. vi. 39.—N. S. Wales, Victoria and Tasmania.

30. **B. calocarpa,** *F. Muell. in Linnæa*, xxv. 399. A perennial with short branching stems, more or less clothed with a white wool, especially when young, and more robust than *B. marginata*. Leaves linear-lanceolate or cuneate, acute, entire or with a few acute lobes or teeth towards the end or above the middle, of a rather thick texture. Flower-heads rather large, on very long peduncles. Involucral bracts broadly scarious. Rays rather small, white or pink (*F. Mueller*). Achenes flattened, tuberculate or muricate, bordered by a rather broad wing either entire or broken up into lobes.

N. S. Wales. Hawkesbury river, *R. Brown* (nearly glabrous).

Victoria. Wimmera, *Dallachy*.

S. Australia. Murray river, Cudnaka, *F. Mueller*.

The species appears to differ from *B. marginata* chiefly in the colour of the ray; the notes, however, of collectors are in this respect somewhat vague, and it is possible that the two may be varieties only.

31. **B. marginata,** *Benth. in Hueg. Enum.* 60. A perennial with slender branching glabrous stems, almost woody at the base. Leaves linear or linear-oblong, acute, entire or rarely with 1 or 2 teeth, narrowed at the base. Peduncles very long and slender. Ray-florets yellow (*F. Mueller*), white

(*R. Brown*). Involucral bracts rather broadly scarious. Achenes flattened, usually tuberculate, bordered by a rather broad wing, either entire or more frequently broken up into lobes.—*B. chrysoglossa*, F. Muell. in Trans. Phil. Soc. Vict. i. 44, and in Hook. Kew Journ. viii. 148.

Queensland. Burnett river and Peak Downs, *F. Mueller;* Bogan river, *Mitchell.*
N. S. Wales. Paterson's and Hunter's rivers, *R. Brown.*

32. **B. Sieberi,** *DC. Prod.* v. 306. A glabrous perennial, with weak decumbent branching and leafy stems. Leaves from obovate to cuneate-oblong, sessile except the lower ones and often stem-clasping, obtuse and usually with a few small teeth or lobes towards the end or the narrower ones minutely 3-toothed at the end. Flower-heads small, on slender peduncles. Involucral bracts narrow. Achenes narrow-obovate, very flat, with thickened margins, not winged. Pappus conspicuous.

N. S. Wales. Port Jackson, *R. Brown; Sieber, n.* 485; *Harvey.*

33. **B. discolor,** *C. Stuart in Herb. Hook.* A glabrous perennial, stems slightly branched and decumbent at the base, ascending to a foot in length or more. Leaves obovate or cuneate-oblong, obtuse, coarsely crenate or pinnatifid, of a firm texture, purple underneath when fresh (*C. Stuart*), all petiolate. Flower-heads small, on very long peduncles. Involucral bracts narrow. Achenes obovate, flat, often tuberculate, with thickened margins. Pappus conspicuous.

N. S. Wales. New England, *C. Stuart;* Clarence river, *Beckler.*

34. **B. multifida,** *DC. Prod.* v. 306. A branching, erect or diffuse perennial or undershrub, usually glabrous. Leaves pinnate with linear segments, sometimes entire but more frequently lobed or pinnatifid, sometimes long and narrow, sometimes short and slightly dilated. Flower-heads rather small, on long slender peduncles. Achenes black, narrow, slightly compressed, the sides tubercular, the smooth margins often prominent but not winged. Pappus small.—*B. glabra*, Benth. in Hueg. Enum. 59.

N. S. Wales. Port Jackson, *Harvey, Woolls;* Head of the Gwydir, *Leichhardt;* New England, *C. Stuart;* Peel's Range, *A. Cunningham.*
Victoria. From Lake Wellington in Gipps' Land to the Grampians and Murray river, *F. Mueller* and others.

Var. *dilatata.* Leaves thin, the lobes often broadly linear or cuneate.—*B. tenera*, Benth. in Hueg. Enum. 59. Hunter's River, *R. Brown.*

SECTION IV. SILPHIOSPERMA.—Ray-florets not exceeding the involucre. Achenes flat, bordered by an entire or toothed wing. Pappus none. Small annuals.

35. **B. glandulosa,** *Benth.* Very closely allied to *B. collina* but larger, the erect or ascending branching stems attaining 3 to 6 in., and more or less glandular-pubescent. Leaves linear, acutely toothed or pinnatifid. Flower-heads about 2 lines diameter, with the florets of *B. collina*, but the involucral bracts much narrower, almost linear, and usually hirsute with a few glandular hairs. Wings of the achenes sometimes quite entire, sometimes bordered by a few teeth. *Silphiosperma glandulosum*, Steetz in Pl. Preiss. i. 433.

W. Australia, *Drummond, n.* 15, 99, *5th Coll. n.* 378; *Preiss, n.* 163.

36. **B. collina,** *Benth.* A small erect branching annual, rarely exceeding 2 in., glabrous or slightly pubescent. Leaves small, linear, pinnatifid with short mucronate lobes, the lower lobes reduced sometimes to short cilia. Flower-heads about 2 lines diameter. Involucral bracts few, ovate, the scarious margins very narrow, the inner bracts more oblong. Florets not longer than the involucre, those of the ray with a very small ligula, scarcely so long as the style. Achenes obovate, as long as the involucre, very flat, bordered by a wing divided into linear lobes hooked at the end; the disk sprinkled with a few hairs. Style-lobes quite those of *Brachycome.*—*Silphiosperma collinum*, Sond. in Linnæa, xxv. 483.

Victoria. Hopkins river, Mount Emu, *F. Mueller*; Wimmera, *Dallachy*; Skipton, *Whan.*

S. Australia. Holdfast Bay, near Gawler Town, foot of Mount Alexander, *F. Mueller.*

Var. *perpusilla.* Stems ½ to 1 in. high. Leaves mostly entire. Achenes rather less toothed.—*Silphiosperma perpusillum*, Steetz in Pl. Preiss. i. 434; *Brachycome tenella*, Turcz. in Bull. Mosc. 1851, i. 176.

W. Australia, *Drummond, 4th Coll. n.* 208; *Preiss, n.* 2416.

21. SPHÆRANTHUS, Willd.

Flower-heads small, sessile in dense globular clusters or compound heads. Involucres ovoid, the bracts linear, imbricate in several rows. Florets not numerous, those of the circumference female filiform and minutely 2- or 3-toothed, hardened at the base; disk-florets very few, hermaphrodite but sometimes sterile, tubular, 5-toothed, thickened at the base. Anthers without tails or points at the base. Styles of the disk-florets bulbous at the base, simple or with 2 slender branches, papillose outside towards the end. Achenes oblong, somewhat flattened, without any pappus.—Coarse erect herbs. Leaves alternate, toothed, decurrent on the stem. Compound flower-heads terminal.

The genus comprises very few species, ranging over tropical Asia and Africa, the two Australian ones being the two most common over the whole area.

Pubescent or hirsute. Involucral bracts ending in a subulate ciliate point. Disk-florets (always?) sterile . . . . 1. *S. hirtus.*
Glabrous. Involucral bracts scarious, often jagged at the end. Disk-florets (always?) fertile . . . . 2. *S. microcephalus.*

1. **S. hirtus,** *Willd.*; *DC. Prod.* v. 369. Erect with few divaricate branches, more or less hirsute, 1 to 2 ft. high. Leaves obovate, oblong or lanceolate, irregularly and acutely toothed or almost lobed, decurrent along the stem into interrupted toothed wings. Flower-heads numerous, in globular clusters or compound heads of 4 to 5 lines diameter when in flower, ½ in. when in fruit. Bracts linear, scale-like at the base, tapering into subulate hirsute or ciliate points, those surrounding the partial heads rather broader. Female florets 6 to 8 or rather more, not exceeding the involucre; disk-florets 2 or 3, with simple styles. Achenes of the ray slightly hairy, those of the disk abortive.—Wight, Ic. t. 1094; F. Muell. Fragm. iii. 138.

N. Australia. Victoria river and Gulf of Carpentaria, *F. Mueller*; Albert river and Bentinck's Island, *Henne.*

Queensland. Sellheim river, *Bowman*; Maranoa and Belyando rivers, *Mitchell.*

The species is common in tropical Asia, extending into tropical Africa.

2. **S. microcephalus,** *Willd.*; *DC. Prod.* v. 369. Erect, 1 to 2 ft. high, quite glabrous or rarely minutely glandular-pubescent. Leaves elliptical, oblong or lanceolate, acute, with small acute teeth, decurrent along the stem into continuous entire or slightly toothed wings. Flower-heads in globular clusters or compound heads, rather smaller than in *S. hirtus.* Involucral bracts oblong-linear or cuneate, often jagged at the end. Florets and achenes of *S. hirtus*, but those of the disk fertile as well as those of the circumference.—*S. glaber*, DC. Prod. v. 370; F. Muell. Fragm. iii. 138.

N. Australia. Low flats, Alligator river, and Van Diemen's Gulf, N.W. coast, *A. Cunningham*; islands of the Gulf of Carpentaria, *R. Brown*; Albert river, *F. Mueller.* Also in Ceylon and in the Indian Archipelago.

22. MONENTELES, Labill.

Flower-heads small, sessile, in dense globular clusters or compound heads, interspersed with woolly bracts. Partial involucres ovoid, the bracts linear, usually glabrous and more or less scarious. Florets of the circumference numerous, female, filiform, minutely toothed, not exceeding the disk. Disk-florets solitary or rarely 2 or 3, tubular, hermaphrodite but usually sterile, 4- or 5-toothed. Anthers with more or less prominent tails or points at the base. Style-lobes flattened or almost subulate, papillose outside towards the end. Achenes small, terete or slightly compressed, those of the disk usually abortive. Pappus of capillary simple bristles united in a ring at the base.—Herbs or undershrubs, usually glandular-pubescent and strongly scented, often woolly. Leaves alternate, crenate or toothed, decurrent on the stem. Clusters or compound flower-heads solitary and terminal, or small and numerous in a terminal spike with one bract, usually persistent on the common receptacle under each partial head, the partial involucres often very deciduous.

The species are all Australian, but two of them extend also into New Caledonia and the Eastern Archipelago. With the compound inflorescence and decurrent leaves of *Sphæranthus* the genus is readily distinguished by the pappus and the tailed anthers. The inflorescence is nearly that of the *Angianthea*, but there are numerous female filiform florets, and the style-branches of the disk are not truncate. From the American genus *Pterocaulon* it scarcely differs in the hermaphrodite flowers usually reduced to a single one.

- Clusters of flower-heads small but numerous, forming a terminal dense or interrupted spike.
  - Involucres rigid, about 4 lines long. Leaves ovate or obovate, often above 3 in. long, the wool very dense, almost floccose . 1. *M. verbascifolius.*
  - Involucres not 2 lines long. Leaves obovate or oblong, under 2 in long, tomentose or shortly woolly . . . . 2. *M. spicatus.*
- Clusters of flower-heads solitary, globular or ovoid-oblong.
  - Plant tomentose or woolly. Decurrent wings entire. Clusters globular . . . . 3. *M. sphacelatus.*
    - Plant glandular-pubescent, not tomentose. Decurrent wings toothed.
      - Clusters ovoid or oblong, large. Disk-florets solitary . 4. *M. glandulosus.*
      - Clusters globular, rather small. Disk-florets usually 2 . 5. *M. sphæranthoides.*

1. **M. verbascifolius,** *F. Muell. Herb.* A tall erect perennial or undershrub, the foliage densely woolly, often floccose, resembling that of *Verbascum Thapsus.* Leaves ovate or obovate, 2 in. long or more, obtuse, crenulate and sometimes sinuate, very thick and soft, decurrent into entire wings. Clusters of flower-heads numerous, sessile in dense continuous oblong or cylindrical terminal spikes much larger than in *M. spicatus.* Bracts of the common receptacle short, linear, woolly-hairy as in the other species but less spathulate, those of the partial involucres 3 to 4 lines long, linear, rigidly scarious. Ray-florets very numerous; disk-florets solitary.

N. Australia. Glenelg river, N.W. coast, *Marten;* between Victoria and Fitzmaurice rivers, *F. Mueller.*

Queensland, *Bowman.*

2. **M. spicatus,** *Labill. Sert. Austr. Caled.* 43. *t.* 43. An erect perennial of 1 to 3 ft., softly tomentose, pubescent or woolly all over. Leaves obovate or oblong, obtuse, crenate, 1 to 2 in. long or smaller on the flowering branches, soft, rugose, decurrent into narrow entire wings. Clusters of flower-heads small, globular, sessile, forming terminal cylindrical and continuous or interrupted spikes, each cluster rarely above 3 or 4 lines diameter, and containing from 10 to 20 heads. Bracts of the common receptacle linear, acute, woolly, not 2 lines long, those of the partial involucres narrow-linear, acuminate, glabrous. Disk-florets solitary. Achenes sprinkled with a few hairs.—DC. Prod. v. 455.

Queensland. Flinders river, *Bowman;* Fitzroy river, *Fitzalan;* Rockhampton, *Dallachy;* Keppel Bay, *Thozet;* Brisbane river, Moreton Bay, *Fraser, F. Mueller.* The species is also in New Caledonia, Burmah and the Philippine Islands.

3. **M. sphacelatus,** *Labill. Sert. Austr. Caled.* 43. *t.* 44. A perennial or undershrub of 1 to 2 ft., softly tomentose-pubescent or woolly all over. Leaves oblong or lanceolate, obtuse or rarely acute, the larger ones 1 to 2 in. long, those on the flowering stems often smaller, entire or crenulate, soft, rugose, decurrent into narrow wings usually entire. Clusters of flower-heads globular or nearly so, solitary, terminal and pedunculate or rarely becoming lateral and sessile by the elongation of the shoot. Bracts of the common receptacle linear with dark spathulate tips, and densely clothed with long woolly hairs, those of the partial involucres linear, scarious, acute, glabrous or slightly ciliate. Female-florets numerous; disk-florets usually solitary. Style-lobes almost subulate. Achenes glabrous.—DC. Prod. v. 456; *M. globiferus* and *M. intermedius,* DC. l. c. 455.

N. Australia. Nichol Bay, N.W. coast. *Herb. F. Mueller;* Victoria river and M'Adam Range, *F. Mueller;* Albert river, *Henne;* Gulf of Carpentaria, *Landsborough;* Attack Creek and M'Donnell ranges, *M'Douall Stuart's Expedition.*

Queensland. Common along the sandy shores and in the adjacent islands, *R. Brown* and others. Brisbane river, Moreton Bay, *A. Cunningham;* Pine river, *Fitzalan.*

N. S. Wales. Darling river, *Dallachy and Goodwin.*

S. Australia. Towards Spencer's Gulf, *Warburton.*

The species is also in New Caledonia and New Guinea.

4. **M. glandulosus,** *F. Muell. Herb.* A tall erect strongly-scented perennial or undershrub, more or less glandular-pubescent but not woolly. Leaves ovate-lanceolate or lanceolate, acute and acutely toothed, bullate-

rugose, 1 to 2 in. long, decurrent into irregularly and acutely-toothed wings. Clusters of flower-heads terminal and solitary, ovoid or oblong, ½ to 1 in. long. Bracts of the common receptacle linear or linear-cuneate, ciliate with a few long woolly hairs, but not densely woolly as in the other species, those of the partial involucres about 2 lines long, linear, acute, often ciliate with a few hairs. Female-florets numerous; disk-florets solitary.

Queensland. Keppel and Shoalwater bays, Thirsty Sound and Broad Sound, *R. Brown*; rocky hills, Cape Cleveland, *A. Cunningham*; Gilbert river, *F. Mueller*; Flinders and Fitzroy rivers, *Bowman*; Rockhampton and Keppel Bay, *Thozet.*

5. **M. sphæranthoides,** *DC. Prod.* v. 456. A strong-scented shrub or undershrub of 2 to 3 ft., more or less glandular-pubescent or at length glabrous. Leaves linear-lanceolate, obtuse, 1 to 2 in. long on the barren shoots, smaller on the flowering-stems, very rugose or bullate, with revolute toothed margins decurrent into narrow toothed wings. Clusters of flower-heads terminal, solitary, globose or slightly ovoid, fully ½ in. diameter. Bracts of the common receptacle densely crowded, linear, very woolly-hairy, the spathulate tips glandular. Partial involucres very numerous, the bracts linear, scarious, white, glabrous or slightly ciliate. Female-florets numerous; disk-florets usually 2, very rarely 1 or 3. Style-lobes linear-lanceolate. Achenes small, glabrous.

N. Australia. Enderby Island, Dampier's Archipelago, N.W. coast, *A. Cunningham* (the specimens all past flower, showing the persistent bracts of the common receptacle with a few remains of the partial heads); N.W. coast, *Bynoe*; granite hill, Nichol Bay, *Gregory's Expedition.*

23. BLUMEA, DC.

Involucre ovoid or campanulate, the bracts imbricate in several rows, narrow-linear, herbaceous or soft. Receptacle nearly flat, without scales. Florets all tubular, those of the circumference female, filiform, usually very numerous, those of the disk hermaphrodite, broader, usually few. Anthers with short fine tails or points at the base. Style-branches filiform, papillose outside at the end. Achenes small, usually somewhat compressed, striate or ribbed. Pappus of numerous capillary bristles. Annual or perennial herbs, usually villous woolly or glandular-pubescent. Leaves alternate, toothed, lobed or rarely entire. Flower-heads in terminal pyramidal or oblong panicles, sometimes contracted into spikes or clusters, or rarely the heads solitary.

A considerable genus, confined to the warmer regions of the Old World, some of them ubiquitous and variable weeds, upon which a large number of spurious species have been fabricated, the real limits of the more distinct forms often very difficult to establish. Of the seven Australian species three appear to be endemic, the other four belong to some of the more common Asiatic forms. The genus is very closely allied to *Conyza* and to *Pluchea*, having very nearly the same florets and achenes, with the involucres and habit of the former and the tailed anthers of the latter.

Flower-heads all distinctly pedunculate.
  Glandular-pubescent, not tomentose.
    Leaves all or almost all narrowed into a petiole. Usually above 1 ft. high . . . . 1. *B. glandulosa.*

Stem-leaves sessile and stem-clasping. Radical leaves only petiolate. Rarely exceeding 1 ft. in height . . . . . 2. *B. amplectens.*
Usually not exceeding 1 ft., pubescent or villous, not viscid. Stem-leaves sessile and stem-clasping, mostly lanceolate. Peduncles rather long . . . . 3. *B. integrifolia.*
Small. Leaves chiefly radical. Stem-leaves few, small, ovate. Peduncles long and filiform . . . . 4. *B. diffusa.*
Flower-heads, at least the upper ones, sessile and clustered.
Leaves lanceolate, oblong or obovate-oblong, the upper ones sessile.
Involucre about 4 lines long . . . . 5. *B. hieracifolia.*
Involucre under 3 lines long . . . . 6. *B. Cunninghamii.*
Almost all the leaves petiolate and broadly obovate. Involucre 2 to 3 lines long . . . . 7. *B. lacera.*

1. **B. glandulosa,** *DC. Prod.* v. 438. An erect annual, often 2 to 3 ft. high, more or less covered with a glandular-viscid pubescence, with sometimes a little wool at the base of the leaves. Leaves obovate ovate or lanceolate, acutely or coarsely toothed, green on both sides, the lower ones often 3 to 5 in. long and almost lobed at the base, on long stalks, the upper ones smaller and narrower but all petiolate. Flower-heads about 4 lines long, all pedunculate or rarely in some Indian specimens a few of the upper ones almost sessile, forming a large pyramidal panicle.

Queensland. Endeavour river, *Banks and Solander;* Broad Sound and Shoalwater Bay, *R. Brown;* Port Molle, *M'Gillivray.* The species is widely spread over E. India and the Archipelago, extending to S. China.

Var. *minor.* Not exceeding $1\frac{1}{2}$ ft. in height. Leaves and flower-heads smaller. Port Molle, *M'Gillivray;* Rockhampton, *Thozet.*

2. **B. amplectens,** *DC. Prod.* v. 433. An annual with erect or ascending stems, usually under 1 ft. high, more or less covered with a glandular-viscid pubescence. Radical leaves obovate and petiolate, the stem leaves all sessile and stem-clasping, from ovate to lanceolate, acutely toothed and usually small. Flower-heads all pedunculate, not numerous, in a loose panicle, very divaricate in Indian specimens, less so in the Australian ones. Involucres nearly 3 lines long. Style-branches of the disk-florets long and slender.

Queensland. Keppel Bay, *Thozet;* Connor river, *Bowman.* The species is common in E. India.

3. **B. integrifolia,** *DC. Prod.* v. 433. A rather slender annual, erect or branching from the base, rarely above 1 ft. high, pubescent or hirsute, and perhaps sometimes viscid, the young shoots occasionally silky-woolly. Leaves oblong-lanceolate or rarely the lower ones almost obovate, acute and bordered by distant acute teeth, rather rigid and often scabrous, the lower ones 1 to 3 in. long, the upper ones smaller, narrowed towards the base or broad and stem-clasping at the base. Flower-heads not clustered, the peduncles at first short but generally long and slender when the flowers are fully out. Involucres 2 to 3 lines long.

N. Australia. Port Keatts, N.W. coast, *A. Cunningham;* Victoria river, M'Adam Range, Roper river, *F. Mueller.*

4. **B. diffusa,** *R. Br. Herb.* A small slender and diffuse annual, slightly viscid, with a very little wool at the base of the stems, rarely exceed-

ing 6 in. including the peduncles. Leaves chiefly radical and rosulate, petiolate, obovate-oblong, ½ to 1 or rarely 2 in. long; those on the stem few, small, ovate, stem-clasping. Peduncles long and very slender. Flower-heads small, glabrous or slightly pubescent.

N. Australia. Islands of the Gulf of Carpentaria, *R. Brown;* towards M'Adam Range, *F. Mueller.*

5. **B. hieracifolia,** *DC. Prod.* v. 442. An erect stiff almost simple annual, 1 to 2 ft. high, more or less tomentose or densely villous, but not viscid. Leaves oblong, irregularly and sharply toothed, the lowest nearly obovate, 2 to 3 in. long, and petiolate, the others sessile or nearly so but narrowed at the base, the uppermost almost lanceolate. Flower-heads about 4 lines long, mostly sessile and clustered, the lower clusters distant, the upper ones forming a terminal leafy spike, or more rarely branching into an oblong terminal panicle. Involucres always tomentose, the bracts linear acute and soft as in the rest of the genus, but rather broader than in the following 2 species.—Wight, Ic. t. 1099 (representing a dwarf form).

N. Australia. Between Providence Hill and M'Adam Range, *F. Mueller.*

Queensland. Broad Sound, *R. Brown;* Keppel Bay, *Thozet;* Moreton Bay, *Leichhardt;* also a doubtful fragment in *Bowman's* collection.

The species is one of the common ones in tropical Asia from Ceylon and the Peninsula to the Archipelago, and northwards to S. China and Formosa. R. Brown's and F. Mueller's specimens belong to the very villous var. *holosericea*, Benth. Fl. Hongk. 178, or *B. holosericea*, DC. Prod. v. 442. Leichhardt's and Thozet's are less villous, the leaves of the former nearly glabrous and on longer petioles.

6. **B. Cunninghamii,** *DC. Prod.* v. 435. An erect stiff scarcely branched annual, pubescent or silky-villous. Leaves as in *B. hieracifolia*, the lower ones petiolate and nearly obovate, the uppermost lanceolate often stem-clasping, all irregularly and acutely toothed. Flower-heads 2 to 3 lines long, mostly sessile in small clusters, forming an oblong leafy panicle. Involucres of *B. lacera.*

N. Australia. Careening and Brunswick bays, N.W. coast, *A. Cunningham;* Point Pearce, Victoria river, *F. Mueller;* Gulf of Carpentaria, *R. Brown.* This plant does not appear to be exactly matched in any of our Indian specimens, although closely allied both to the preceding and the following species. It differs from *B. hieracifolia* chiefly in the smaller flower-heads, from *B. lacera* in the more sessile leaves.

7. **B. lacera,** *DC. Prod.* v. 436. An erect annual, 1 to 2 ft. high, simple or branched, not usually so stiff as *B. hieracifolia*, more or less clothed with soft whitish hairs or pubescence. Leaves all petiolate, obovate ovate or rarely oblong, coarsely toothed or almost lyrate. Flower-heads seldom above 3 lines long and often not above 2 lines, very numerous in narrow oblong and dense or looser and more spreading panicles, leafy at the base, the upper heads sessile and clustered on the branches. Involucral bracts usually very narrow.

N. Australia. Victoria river, *F. Mueller.*

Queensland. Shoalwater Bay, *R. Brown;* Burdekin Expedition, *F. Mueller;* Rockhampton, *Dallachy;* Brisbane river, Moreton Bay, *Fraser, F. Mueller.*

This is one of the commonest weeds in tropical Asia, extending from tropical and subtropical Africa to the Archipelago and S. China. It is also extremely variable and sometimes difficult to recognize in the bad specimens often preserved in herbaria. The Aus-

tralian ones I have seen belong chiefly to a slender loosely-branched variety with long-petioled thin leaves, often distinguished as a species under the name of *B. Wightiana*, DC. Prod. v. 435; Benth. Fl. Hongk. 178, but which Thwaites appears to be right in reducing to *B. lacera*. The Brisbane river specimens are on the other hand nearly as tall and rigid as *B. hieracifolia*, and the flower-heads are rather larger than usual in *B. lacera*, but the leaves are mostly lyrate and all petiolate, and they appear to represent only a luxuriant state of *B. lacera*.

24. PLUCHEA, Less.

(Spiropodium *and* Eyrea, *F. Muell.*)

Involucre either ovoid with the bracts imbricate in several rows, usually broader, more rigid and less acuminate than in *Blumea*, or hemispherical with narrow bracts. Florets all tubular, those of the circumference female, filiform, usually very numerous, those of the disk broader, hermaphrodite, but usually sterile, few, or the heads almost diœcious. Anthers with short fine tails or points at the base. Style (of the disk-florets) simple, papillose towards the end, or very rarely branched as in *Blumea*. Achenes small, usually somewhat compressed. Pappus of numerous capillary bristles.—Shrubs, undershrubs, or perennial herbs (rarely if ever annuals). Leaves alternate, entire toothed or rarely almost pinnatifid. Flower-heads in terminal corymbs, sometimes contracted into clusters or rarely solitary.

The genus comprises several N. and S. American species, a very few from Africa and tropical and subtropical Asia, besides the Australian ones, five of which are endemic, the sixth a common Asiatic one. They differ generally from *Blumea*, in habit as well as in the involucre and style, but none of these characters are quite constant. They have some affinity also with *Pterigeron*, but the female florets are never ligulate, and the style is scarcely or not at all bulbous at the base.

SECTION I. **Pluchea.**—*Flower-heads ovoid. Involucral bracts lanceolate or the outer ones ovate.*

Shrub of 3 to 4 ft. Leaves obovate. Flower-heads in dense terminal corymbs 2 to 3 in. diameter . . . . 1. *P. indica.*
Herbs or undershrubs of 1 to 2 ft. Flower-heads in loose leafy corymbose panicles, solitary or in small clusters on the branches.
  Leaves obovate or oblong-lanceolate . . . . 2. *P. tetranthera.*
  Leaves linear . . . . 3. *P. baccharoides.*

SECTION II. **Eyrea.**—*Flower-heads broad or hemispherical. Involucral bracts narrow.*

Flower-heads about ¼ in. diameter, the bracts all dry . . . . . . 4. *P. Eyrea.*
Flower-heads nearly ½ in. diameter, the outer bracts with reflexed tips often leafy.
  Inner bracts with acuminate coloured tips. Western species . . 5. *P. squarrosa.*
  Nearly all the bracts with fine hair-like tips. Eastern tropical species . . . . 6. *P. dentex.*

SECTION I. PLUCHEA.—Flower-heads ovoid. Involucral bracts lanceolate or the outer ones ovate.

1. **P. indica,** *Less.*; *DC. Prod.* v. 451. An erect branching shrub, attaining 3 to 4 ft., glabrous or covered with a minute glandular pubescence. Leaves shortly petiolate, obovate, oblong or rarely ovate, 1 to 2 in. long, with a few small acute teeth or almost entire. Flower-heads in dense terminal

corymbs of about 3 in. diameter and sessile above the last leaves. Involucres ovoid, about 3 lines long, the outer bracts short and obtuse, passing into the innermost acute ones. Female florets very numerous, those of the disk rarely above 6. Anther-tails rather long.—Wight, Illustr. t. 131.

N. Australia. Islands of the Gulf of Carpentaria and the opposite mainland, *R. Brown;* Port Essington, *Armstrong.* Extends over E. India and the Archipelago to S. China.

2. **P. tetranthera,** *F. Muell. Rep. Babb. Exped.* 12. A rigid perennial or undershrub, glabrous or glandular-pubescent in the ordinary forms. Leaves petiolate, from small and obovate to oblong-lanceolate and 1 in. long or rather more, the upper ones sometimes linear, acutely and irregularly toothed or almost entire, those of the barren shoots usually obovate. Flower-heads small, often sessile in clusters of 2 or 3, forming a terminal corymbose panicle. Involucre narrow-ovoid, scarcely 3 lines long, the outer bracts short and obtuse, the inner acute rigid and dry. Florets rather shorter than the involucre, in some heads the female filiform ones very numerous, with only 2 or 3 disk-florets, in others those of the disk at least as numerous as the female ones. Corollas of the disk 4-toothed. Style with 2 filiform papillose branches.

N. Australia. Victoria, Flinders, and Van Alphen rivers, *F. Mueller.*

Queensland. Broad Sound, *R. Brown;* heads of Isaacs river, *Bowman;* Rockhampton, *Thozet.*

Var. *tomentosa.* Taller, leaves larger, and the whole plant closely but softly tomentose. —Arnhem's Land, *F. Mueller.*

3. **P. baccharoides,** *F. Muell. Herb.* A much-branched erect shrub of a few feet, glabrous and somewhat glutinous. Leaves narrow linear, mostly acute, ½ to 1 in. long, rather thick, quite entire. Flower-heads small, sessile or shortly pedunculate in terminal leafy panicles, almost unisexual, the males with ovoid involucres about 2 lines long, the florets chiefly hermaphrodite but sterile, the females narrower and longer, the florets chiefly filiform and shorter than the pappus. Involucral bracts in both dry, much imbricate, minutely ciliolate. Style in the males undivided. Pappus bristles not numerous.—*Spiropodium baccharoides*, F. Muell. Fragm. i. 34.

Queensland. Suttor river, *F. Mueller;* Belyando river, *Mitchell.* This species at first sight much resembles some of the common S. American *Baccharises*, allied to *B. paniculata*, DC., but differs in its terete not angular branchlets, in the shorter florets, in the tailed anthers, and in the heads not perfectly diœcious. I have always found a few central hermaphrodite sterile florets in the female heads and a few filiform female florets in the male heads.

SECTION II. EYREA.—Flower-heads broad or hemispherical. Involucral bracts very narrow.

4. **P. Eyrea,** *F. Muell. Rep. Babb. Exped.* 11 and 12. A glabrous perennial or undershrub, often under 1 ft. high, with erect virgate branches paniculate at the top. Leaves mostly linear, erect, bordered by a few small teeth, under ½ in. long, more or less decurrent along the stem, a few on the main stem lanceolate and broadly decurrent. Flower-heads small, usually numerous, in little corymbs of 3 to 5 each. Involucres broadly ovoid or

hemispherical, the bracts much imbricate, narrower than in the preceding species, the inner ones 2 lines long with subulate points. Female florets very numerous, scarcely thicker than the bristles of the pappus; disk-florets also numerous, with an undivided exserted style. Anther-tails minute. Achenes terete or nearly so. *Eyrea rubelliflora*, F. Muell. in Linnæa, xxv. 403.

N. Australia. Islands of the Gulf of Carpentaria, *R. Brown*; Arnhem's Land, *F. Mueller*; Nichol Bay, *F. Gregory's Expedition* (a slender form with smaller flower-heads).
Queensland. Keppel Bay and Broad Sound, *R. Brown*; in the interior, *Mitchell.*
W. Australia. Murchison river, *Oldfield, Drummond, 6th Coll. n.* 163.

Var.? *major.* Taller, more divaricately branched. Flower-heads larger and less corymbose. Inner involucral bracts about 3 lines long. Style sometimes branched.
N. S. Wales. Darling river, *Victorian Expedition.*
S. Australia. Dried river-beds, Crystal Brook, Arkaba, *F. Mueller.*

5. **P. squarrosa,** *Benth.* Erect, glabrous or minutely glandular-pubescent, with virgate corymbose branches, 1 to 2 ft. high. Leaves linear linear-cuneate or lanceolate, bordered by a few distant teeth or the larger ones almost pinnatifid, narrowed at the base, often above 1 in. long. Flower-heads much larger than in *P. Eyrea.* Involucres hemispherical, fully ½ in. diameter, the bracts numerous, with herbaceous reflexed tips, the innermost with acuminate, erect, coloured tips. Female florets very numerous, slender, but scarcely filiform, rather longer than the involucre, the style-branches protruding. Disk-florets several, with an undivided style. Achenes pubescent.

W. Australia. Murchison river, *Oldfield, Drummond, 6th Coll. n.* 150.

6. **P. dentex,** *R. Br. Herb.* Erect, much branched, with a hard almost woody base, 1 to 2 ft. high, viscid and minutely pubescent. Leaves linear, mostly above 1 in. long, remotely toothed or pinnatifid with short distant lobes, the upper ones small and entire. Flower-heads larger than in *P. Eyrea.* Involucres hemispherical, the bracts very narrow, the inner ones with a fine hair-like point, a few of the outer ones greener and more recurved. Female florets very numerous, those of the disk usually few. Achenes pubescent.

Queensland. Broad Sound and Thirsty Sound, *R. Brown*; sources of Gilbert river, *F. Mueller*; Port Denison, *Fitzalan.*

25. EPALTES, Less.

(Sphæromorphæa, *DC.* (*partly*); Ethuliopsis, *F. Muell.*)

Involucre ovoid-globular or hemispherical, the bracts imbricate, usually broad, dry and rigid. Receptacle nearly flat, without scales. Florets all tubular, those of the circumference numerous, female, very slender, minutely toothed, those of the disk hermaphrodite, but usually sterile, broader, 3- to 5-toothed, either few or the flower-heads almost diœcious. Anthers with minute tails or points at the base. Style of the disk-flowers undivided or with short obtuse branches, papillose outside. Achenes nearly terete, striate, those of the ray without any pappus, those of the disk usually abortive and with a pappus of 2 or 3 very deciduous bristles.—Herbs, either erect and dichotomous or diffuse. Leaves alternate, entire, toothed or lobed. Flower-heads small in dichotomous cymes or lateral and sessile. Involucral bracts very obtuse in the Australian species, more acute in the Indian *E. divaricata.*

A small genus, comprising, besides the two Australian species (one of which is endemic, and the other only recently found in Formosa), at least one more, a common one in tropical Asia and some parts of Africa. The genus is closely allied to *Pluchea,* differing chiefly in the absence of any pappus to the fertile achenes.

Erect, dichotomously branched. Flower-heads ovoid-globular, terminal, and loosely clustered, often diœcious . . . . 1. *E. Cunninghamii.*
Diffuse annual. Flower-heads hemispherical, lateral, sessile or nearly so . . . . 2. *E. australis.*

1. **E. Cunninghamii,** *Benth.* Glabrous, erect, ½ to 1½ ft. high, dichotomously branched. Leaves sessile and half stem-clasping or sometimes slightly decurrent on the stem, oblong-lanceolate, obtuse, irregularly toothed, the upper ones small, narrow, and sometimes entire. Flower-heads small, clustered at the ends of the branches of loose dichotomous cymes. Involucres ovoid-globular, varying from 1 to 2 lines diameter, the bracts very obtuse. Female florets not exceeding the involucre, in some specimens very numerous with only 1 or 2 hermaphrodite sterile florets in the disk or none at all, in others the female florets few with rather numerous sterile ones. Style of the disk-florets undivided. Fertile achenes without any pappus, sterile ones with a few long deciduous bristles.—*Epaltes australis,* DC. Prod. v. 462, not of Less.; *Ethulia Cunninghamii,* Hook. in Mitch. Trop. Austr. 62; *Ethuliopsis dioica,* F. Muell. Fragm. ii. 155; Pl. Vict. t. 38.

Queensland. Keppel and Shoalwater bays, *R. Brown.*

N. S. Wales. Barren marshes and inundated tracts near the Lachlan and Macquarrie rivers, *Fraser, A. Cunningham, Mitchell;* Darling and Murray rivers, and thence to the Barrier Range, *Victorian and other Expeditions.*

Victoria. Murray desert, Lake Lalbert, *F. Mueller.*

2. **E. australis,** *Less. in Linnæa,* v. 148, *and Syn. Comp.* 206. Annual (or sometimes perennial?), branching at the base and diffuse or prostrate, small or rarely exceeding 1 ft., glabrous scabrous or hirsute with transparent hairs. Leaves petiolate, obovate or cuneate-oblong, entire toothed or almost lyrate, ½ to 1½ in. long. Flower-heads lateral, sessile or shortly pedunculate. Involucre depressed-hemispherical, 2 to 3 lines diameter, the bracts orbicular concave and very obtuse. Female florets not exceeding the involucre, short, and not so slender as in *E. Cunninghamii,* and very numerous; disk-florets fewer, 3- to 5-lobed. Style usually branched with short narrow obtuse lobes. Achenes all without any pappus, those of the disk mostly, but not always sterile.—*Sphæromorphæa petiolaris,* DC. Prod. vi. 140.

N. Australia. Victoria river to Arnhem's Land, *F. Mueller;* in the interior, *M'Douall Stuart's Expedition;* islands of the Gulf of Carpentaria, *R. Brown.*

Queensland. Keppel Bay, *R. Brown, Thozet;* E. coast, *A. Cunningham;* Wide Bay, *Bidwill;* Walloon, *Bowman;* Brisbane river, Moreton Bay, *F. Mueller.*

N. S. Wales. Port Jackson, *R. Brown, Woolls,* and others.

S. Australia. Murray river, *F. Mueller;* Cooper's Creek, *D. Murray.*—Recently received also from Formosa (*R. Oldham*). The species has, at first sight, some resemblance with *Myriogyne minuta,* especially in inflorescence, but besides the distinctly tailed anthers and other floral characters, it is readily distinguished by the involucre.

26. PTERIGERON, DC.

(Streptoglossa, *Steetz;* Oliganthemum, *F. Muell.*)

Involucre hemispherical or ovoid, the bracts imbricate in several rows, usually dry and rigid or the outer ones herbaceous, the innermost narrow, acute, often coloured at the tips. Receptacle without scales. Florets of the circumference numerous or few, female, ligulate or, if tubular, less regularly or more deeply lobed than those of the disk; disk-florets numerous or few, hermaphrodite, fertile or sterile, usually 5-lobed. Anthers with fine tails. Style bulbous at the base, the lobes subulate or slightly flattened, sometimes united to the top, papillose outside towards the end. Achenes nearly terete, silky-hairy. Pappus of scabrous denticulate or almost plumose capillary bristles.—Herbs, usually rigid and glandular-pubescent or hirsute. Leaves alternate, entire or toothed, sometimes decurrent. Flower-heads large or small, terminal, and usually forming terminal leafy corymbs.

The genus is exclusively Australian. Originally established by De Candolle as a section of *Erigeron*, it has been shown by A. Gray to form a very distinct genus, allied in many respects to *Pluchea*, but differing in the prominently bulbous base of the style, and usually in the irregularity of the ray-florets, which connect it with *Dicoma*, amongst *Mutisiaceæ*. It ought perhaps to include *Coleocoma* and *Thespidium*, notwithstanding their anomalous pappus.

Flower-heads large, almost hemispherical.
  Ray-florets ligulate, exceeding the involucre.
    Leaves ovate, decurrent. Ray-florets not ¼ line broad . . 1. *P. decurrens.*
    Leaves narrow or obovate, not decurrent. Ray-florets fully ½ line broad . . . . 2. *P. liatroides.*
  Ray-florets very slender, about as long as the involucre. Leaves oblong, stem-clasping or slightly decurrent . . . . 4. *P. macrocephalus.*
Flower-heads ovoid.
  Leaves decurrent. Ray-florets about as long as the involucre . 3. *P. odorus.*
  Leaves not decurrent. Ray-florets very slender and shorter than the involucre.
    Leaves mostly oblong. Flower-heads broadly ovoid, 6 to 8 lines long . . . . 5. *P. microglossus.*
    Leaves mostly linear. Flower-heads numerous, many-flowered, about 4 lines long . . . . 6. *P. adscendens.*
    Leaves filiform. Flower-heads narrow, 3- or 4-flowered, about 5 lines long . . . . 7. *P. filifolius.*

1. **P. decurrens,** *DC. Prod.* v. 293 (as an *Erigeron*). A rigid branching herb, glandular-pubescent and hirsute. Leaves ovate or oblong, coarsely and irregularly toothed or almost entire, the upper ones broadly decurrent. Flower-heads pedunculate, in a terminal leafy panicle, irregularly corymbose. Involucre ovoid when young, nearly hemispherical and ½ in. diameter when fully out, the outer bracts herbaceous, surrounded by a few floral leaves, the inner ones lanceolate, scarious, very acute, 5 lines long. Ray-florets ligulate but very narrow, longer than the involucre; disk-florets numerous. Style undivided. Achenes clothed with long silky hairs. Pappus almost plumose.—*Streptoglossa Steetzii*, F. Muell. in Trans. Bot. Soc. Edinb. vii. 491 (partly?).

N. Australia. N.W. coast, *Bynoe*. Nichol Bay, *F. Gregory's Expedition.*

2. **P. liatroides,** *Benth.* Erect, rigid and scabrous-pubescent, hirsute or at length nearly glabrous, attaining sometimes 1½ ft., but often flowering when a few in. high. Lower leaves obovate, narrowed into a rather long petiole, the upper ones oblong-cuneate or linear, obtuse, sinuate-toothed or nearly entire, not decurrent. Flower-heads large, not numerous, in a terminal corymb. Involucre hemispherical, nearly 1 in. diameter, the bracts broadly lanceolate, acute or acuminate, the inner ones 7 to 8 lines long and coloured at the apex. Ray-florets ligulate, exceeding the involucre, the ligula fully ½ line broad and 2 lines long, usually 3-lobed. Style of the disk-florets 2-lobed. Achenes silky-villous. Pappus-bristles not numerous, almost plumose.—*Pluchea ligulata*, F. Muell. Rep. Babb. Exped. 12; *Streptoglossa Steetzii*, F. Muell. in Trans. Bot. Soc. Edinb. vii. 491, partly; *Erigeron liatroides*, Turcz. in Bull. Mosc. 1851, i. 172.

W. Australia, *Drummond, n.* 100 and 222; Irvine river, *Oldfield.*

Var. *humilis.* Smaller and more hirsute, the stems in our specimens branching from the base, not above 6 in. high, each usually with a single flower-head.

N. or **S. Australia.** In the interior, Lake Gregory, *G. Hacker;* Strangways river, *M'Douall Stuart's Expedition.*

3. **P. odorus,** *Benth.* Apparently perennial and in the normal form erect, rigid, more or less hirsute, with virgate branches, under 1 ft. high. Leaves sessile and more or less decurrent, the lower ones oblong or lanceolate, obtuse, irregularly toothed, above 1 in. long, the upper ones smaller and linear. Flower-heads mostly terminating very short branches, sessile within 2 or 3 floral leaves. Involucre narrow-ovoid, the bracts imbricate and rigid, the outer ones short, acute or almost obtuse, the inner ones 4 lines long and very acute. Ray-florets about 8 to 10, about as long as the involucre, slender, with 2 or 3, rarely 4 or 5 narrow lobes, more or less distinctly arranged in 2 lips. Style of the disk-florets 2-lobed, the branches slightly flattened and obtuse. Achenes silky-villous. Pappus-bristles denticulate, almost plumose. —*Pluchea odora*, F. Muell. Rep. Babb. Exped. 12.

N. Australia. Victoria river, *F. Mueller.*

Var. ? *major.* Flower-heads larger with more numerous florets. Both the florets and pappus seem to be rather those of *P. odorus* than of *P. adscendens.* The specimens are however very incomplete.—Albert river, *F. Mueller;* Suttor river, *Bowman.*

4. **P. macrocephalus,** *Benth.* Glandular-pubescent or hirsute. Leaves oblong or linear-cuneate, irregularly undulate and toothed, stem-clasping, but only rarely and very slightly decurrent. Flower-heads large, almost hemispherical when fully out, ¾ in. long. Ray-florets not numerous, very slender, about as long as the involucre, 2- or 3-lobed at the end, but not usually ligulate; disk-florets very numerous. Achenes densely silky-hairy.—*Pluchea macrocephala*, F. Muell. Rep. Babb. Exped. 12.

N. Australia. Gulf of Carpentaria, *F. Mueller;* in the interior, lat. 19° 30′, *M'Douall Stuart's Expedition.*

5. **P. microglossus,** *Benth.* Glabrous or slightly glandular-pubescent, the stems rigid, erect, nearly simple or somewhat corymbose, often under 6 in. and none of our specimens above 8 in. high. Leaves from cuneate-oblong to linear-cuneate, entire or denticulate, under 1 inch long, rather rigid,

narrowed towards the base, not decurrent. Flower-heads broadly ovoid, about ½ in. long, the inner involucral bracts very acute. Florets numerous, not exceeding the involucre, those of the ray scarcely so long, with a small, narrow, entire or bifid concave lamina. Achenes less hairy than in *P. ligulatus*. Pappus almost plumose.

N. Australia. Sturt's Creek and Fitzmaurice rivers, *F. Mueller*.

6. **P. adscendens,** *Benth.* A diffuse, ascending or erect, very much branched herb, with a hard almost woody base, glabrous or pubescent. Leaves linear or linear-oblong, narrowed into a petiole, entire or slightly toothed, not decurrent. Flower-heads numerous, rather smaller than in *P. odorus*. Involucre ovoid, the bracts acute, usually but not always surrounded by a few floral leaves. Florets more numerous than in *P. odorus*, those of the ray filiform, scarcely so long as the involucre, with 2 or 3 short linear lobes. Pappus-bristles very minutely denticulate.

Queensland. Suttor, Roper, and Flinders rivers, *F. Mueller*; Cape river, *Bowman*; Belyando river, *Mitchell*.

7. **P. filifolius,** *Benth.* A slender, erect, glabrous annual with filiform dichotomous branches, attaining about 6 in. Leaves filiform, all entire in our specimens, mostly ½ to 1 in. long. Flower-heads solitary or in clusters of 2 or 3. Involucre narrow, 4 to 5 lines long, the bracts rigid, the inner ones very acute. Florets usually 3 or 4, of which 2 or 3 female, slender, shorter than the involucre, 2- or 3-lobed at the top, and apparently one or sometimes none, hermaphrodite or male, but with the corolla already fallen off in all the heads I have examined. Achenes very silky-villous. Pappus rather shorter than the involucre, of numerous unequal bristles, some almost plumose, some entire.—*Oliganthemum filifolium*, F. Muell. Herb.; *Pluchea filifolia*, F. Muell. in Trans. Phil. Inst. Vict. iii. 56.

Queensland. Salsola plains, near the Roper river, *F. Mueller*.—The specimens are old, and I have not succeeded in finding any of the stamen-bearing corollas.

27. COLEOCOMA, F. Muell.

Involucre ovoid, the bracts imbricate in several rows, dry, with slightly scarious tips. Receptacle flat, without scales. Florets all tubular, those of the circumference slender, female, 3- to 5-toothed; disk-florets several, hermaphrodite, sterile, 5-toothed. Anthers tailed. Style of the disk-florets usually undivided. Achenes striate, somewhat compressed, those of the disk abortive. Pappus of linear rigid scale-like bristles, those of the female florets united in a long tube, jagged at the end, those of the disk-florets free almost to the base.—Low rigid herb. Leaves alternate, usually toothed. Flower-heads terminal or lateral.

The genus consists but of a single species, endemic in Australia, differing from *Pterigeron* only in the pappus.

1. **C. centaurea,** *F. Muell. in Hook. Kew Journ.* ix. 19. A low, rigid, erect branching herb, perhaps annual, although almost woody at the base, our specimens quite glabrous. Leaves linear or lanceolate, acute, with a few small acute teeth, contracted at the base, but the upper ones sessile or slightly

decurrent. Flower-heads terminal and sessile within the last leaves or at the base of the lateral branches. Involucre 4 to 5 lines long, the bracts very broad, the inner ones with short broad scarious tips, jagged almost as in *Centaurea*. Florets yellow (F. Muell.). Achenes rather long, but much shorter than the involucre in our specimens, the tips of the pappus of the sterile florets slightly protruding.

N. Australia. Sturt's Creek, *F. Mueller.*

28. THESPIDIUM, F. Muell.

Involucre ovoid, the bracts imbricate in several rows, dry, rigid, and acute. Florets of the circumference female, filiform, shorter than the involucre, 2- or 3-toothed; disk-florets few or only one, hermaphrodite, fertile, 4-toothed. Anthers with minute tails. Style bulbous at the base, the lobes nearly terete, papillose outside towards the end. Achenes cylindrical, striate. Pappus of 10 to 12 bristles, broad and chaff-like at the base, intermixed with a few small setaceous ones.—Low rigid herb. Leaves alternate, entire or toothed. Flower-heads small, often densely clustered in the axils of the leaves and at the base of the stem.

The genus consists of a single species endemic in Australia. It is closely allied to *Pterigeron*, differing chiefly in habit and in the almost scale-like pappus.

1. **T. basiflorum,** *F. Muell. Herb.* A densely-tufted hirsute perennial, with numerous diffuse or ascending stems all under 2 ft. long, crowded on the stock with clusters of flower-heads like some species of *Lepidagathis*. Leaves linear or lanceolate, acute, entire or with a few acute teeth, rarely much above 1 in. long. Flower-heads sessile, solitary or more frequently clustered in the axils and very densely so at the base of the stem. Involucre narrow, about 3 lines long. Female florets rather numerous, those of the disk few or sometimes only one. Achenes of the ray and of the disk slightly contracted at the top and again expanded into the pappus.—*Pluchea basiflora*, F. Muell. Rep. Babb. Exped. 12.

N. Australia. Islands of the Gulf of Carpentaria, *R. Brown;* Port Essington, *Armstrong;* Upper Gilbert river, *F. Mueller.*

TRIBE V. AMBROSIEÆ.—Leaves alternate. Flower-heads strictly unisexual. Anthers not united.

29. XANTHIUM, Linn.

Flower-heads monœcious. Males globular. Involucral bracts small, in a single row. Receptacle cylindrical, with chaffy scales between the florets. Florets numerous, tubular, 5-toothed, without styles. Female heads ovoid. Involucral bracts in 2 or 3 rows, the outer small, the 2 innermost large, consolidated into a hard ovoid 2-celled mass very prickly outside and terminating in 2 tubercles or cones. Florets 2, without corollas. Ovaries each immersed in one of the cells of the involucral mass, the styles protruding with filiform branches. Achenes obovoid, inclosed in the burr-like involucre.

Pappus none. Coarse annuals. Leaves alternate. Flower-heads in axillary or terminal clusters or short racemes.

A genus of two or perhaps three species, natives of the Mediterranean region and the Levant, or one perhaps of Chilian origin, all now spread as weeds over many parts of the world.

*1. **X. spinosum,** *Linn.; DC. Prod.* v. 523. A rigid much-branched annual of 1 to 2 ft., studded with numerous strong trifid spines usually opposite in pairs or rarely solitary, divaricate, placed at the base of the leaves but rather within the petiole. Leaves lanceolate, trifid, with the central lobe much longer than the lateral ones, slightly scabrous above, white-tomentose underneath. Flower-heads in axillary clusters or almost solitary, the upper ones male, the lower female; these are sessile, forming when in fruit oblong burrs about ½ in. long, covered with hooked prickles, the terminal conical beaks exceedingly short, often both reduced to mere tubercles or one only slightly elongated.

An exceedingly troublesome weed, in warm dry situations, supposed to be of Chilian origin, now infesting southern Europe and many warm countries, first observed in Australia about 1852 and now said to be very abundant in many pastures of the interior of **Queensland, N. S. Wales,** and **Victoria,** to the great detriment of the wool.

Tribe VI. Heliantheæ.—Leaves opposite or rarely alternate. Flower-heads usually heterogamous, the florets of the circumference female or neuter and ligulate, or rarely irregular or wanting, the disk-florets hermaphrodite or male, tubular, 4- or 5-toothed. Receptacle bearing chaffy often rigid scales between the florets. Anthers obtuse at the base. Style of the *Senecionideæ* or approaching that of the *Asteroideæ*. Pappus of stiff awns or short scales or rarely none.

30. SIEGESBECKIA, Linn.

Involucral bracts in about 2 rows, the outer ones linear-spathulate, spreading, glandular-hispid, the inner ones ovate or oblong, half enclosing the achenes, glandular-hispid on the back. Receptacle chaffy, the scales half enclosing the achenes. Ray-florets female, shortly ligulate or irregularly 2- or 3-lobed. Disk-florets hermaphrodite, fertile, tubular, 5-toothed. Anthers obtuse at the base. Style-branches short, somewhat flattened, very obtuse or rarely tipped with a small glandular cone. Achenes somewhat turgid, usually curved. Pappus none.—Herbs with opposite leaves. Flower-heads rather small, pedunculate.

A genus of very few species widely dispersed over the warmer regions of the globe, the only Australian one being the most common, especially in the Old World.

1. **S. orientalis,** *Linn.; DC. Prod.* v. 495. A pubescent branching rather stiff annual, 1 to 2 ft. high. Leaves from broadly ovate-triangular to lanceolate, 1½ to 2 in. long or the lower ones larger, the petioles variable in length, usually dilated upwards but not at the base. Flower-heads 3 to 6 lines broad, in a dichotomous leafy panicle. Outer involucral bracts often 4 or 5 lines long and covered with gland-bearing hairs, but sometimes shorter

than the inner ones and less glandular. Florets small, the rays very short.—Wight, Ic. t. 1103; *S. microcephala* and *S. gracilis*, DC. Prod. v. 496.

Queensland. Wide Bay, *Leichhardt;* Rockhampton, *Thozet;* Brisbane river, Moreton Bay, *F. Mueller.*

N. S. Wales. Paramatta, *Woolls;* Blue Mountains, *Miss Atkinson;* New England, *C. Stuart;* Clarence river, *Beckler;* in the interior on the Darling and Murray and towards the Barrier range, *Victorian and other Expeditions.*

Victoria. Tambo and Murray rivers, *F. Mueller;* Portland, *Allitt;* in the Pyrenees, *Wilhelmi.*

S. Australia. Spencer's Gulf, *R. Brown;* near Adelaide, *Blandowski;* Torrens river, *F. Mueller.*

Most of the southern specimens belong to the variety with short outer involucral bracts.

31. ECLIPTA, Linn.

Involucre of about 2 rows of nearly equal herbaceous bracts. Receptacle chaffy. Florets of the ray female, shortly ligulate, narrow; disk-florets hermaphrodite, usually fertile, tubular, 4-toothed. Anthers obtuse at the base. Style-branches linear, flattened, obtuse. Achenes of the ray triangular, those of the disk flattened. Pappus none or reduced to a border of minute teeth.—Herbs with opposite leaves. Flower-heads small, on axillary or terminal peduncles.

Besides the subjoined species, of which one is endemic in Australia and the other a common weed in warm countries, some Brazilian perennials are included in the genus, but perhaps not correctly so.

Ray white. Involucral bracts ovate	1. *E. alba.*
Ray yellow. Involucral bracts narrow-lanceolate	2. *E. platyglossa.*

1. **E. alba,** *Hassk.; Miq. Fl. Ned. Ind.* ii. 65. A branching annual, usually prostrate or creeping, sometimes ascending or erect, 1 ft. long or more, sprinkled with closely appressed short stiff hairs. Leaves shortly petiolate, from nearly ovate to oblong-lanceolate or almost linear, 1 to 2 in. long, coarsely toothed or nearly entire. Peduncles in the upper axils solitary or 2 together, very variable in length, bearing a single flower-head about 3 lines diameter. Involucral bracts usually broadly ovate, obtuse. Scales of the receptacle narrow-linear. Ray-florets small, white. Achenes of the disk with thick almost corky margins, the pappus either quite abortive or reduced to a border of 4 minute obtuse teeth, conspicuous chiefly at the time of flowering.—*E. erecta* and *E. prostrata*, Linn., and the whole section *Eueclipta*, DC. Prod. v. 490.

Queensland. Burdekin river, *F. Mueller;* Brisbane river, Moreton Bay, *C. Stuart, F. Mueller;* Rockhampton, *Herb. F. Mueller.* A common weed throughout the warmer regions of the globe.

2. **E. platyglossa,** *F. Muell. Fragm.* ii. 135; *Pl. Vict. t.* 39. Very near to *E. alba*, but the flower-heads are smaller, the involucral bracts narrow-lanceolate, and the ray-florets yellow. Leaves almost or quite sessile, lanceolate, strigose. Achenes quite those of *E. alba.*—*Wollastonia* or *Wedelia ecliptoides*, F. Muell. Pl. Vict. t. 39.

N. Australia. Islands of the Gulf of Carpentaria, *R. Brown, Henne;* Albert and Roper rivers, *F. Mueller.*

Queensland. Broad Sound, *R. Brown*, Rockhampton, *Dallachy;* Moreton Bay, *C. Stuart;* also in *Leichhardt's* collection.

N. S. Wales. Cabramatta and Mudgee, *Woolls;* Clarence river, *Beckler;* Darling and Murray rivers, *Dallachy and Goodwin, Herrgolt.*

Victoria. Avoca and Murray rivers, *F. Mueller.*

S. Australia. Torrens river, St. Vincent's Gulf, *F. Mueller.*

A specimen from Facing Island, Port Curtis, *R. Brown*, has the involucral bracts nearly as narrow as in *E. platyglossa*, but according to R. Brown's notes, the ray-florets are white and it seems almost to connect the two species.

32. WEDELIA, Jacq.

(Wollastonia, *DC.*)

Involucre of about 2 rows of herbaceous bracts either all nearly equal or the outer ones larger and more leaf-like. Receptacle chaffy. Florets of the ray female, ligulate; disk-florets hermaphrodite, tubular, 5-toothed, mostly fertile. Anthers obtuse at the base. Style-branches with rather acute tips, usually hirsute. Achenes more or less flattened, or rarely 3-angled, with obtuse or acute rarely winged edges. Pappus none or more frequently consisting of minute scales united in a little cup and occasionally produced into 1 or 2 short bristles.—Herbs with opposite leaves. Flower-heads pedunculate or rarely almost sessile, terminal or in the forks of the branches or axils of the upper leaves. Ray yellow.

A considerable American genus with a few African and Asiatic species. Of the six Australian ones, three are widely spread over India and the Archipelago, one or perhaps two of them extending into Africa, a fourth is also found in Timor, the remaining two are endemic. The *W. biflora* and some other species without any pappus have been separated under the name of *Wollastonia*, but in *W. spilanthoides* the pappus is often so small as to be quite inconspicuous when the achene is ripe, and in every other respect the species are all too closely allied to be generically separated. It is probable that the several genera alluded to by A. Gray under *Lipochæta* will have to be united also with *Wedelia.*

Five or six of the outer involucral bracts more leaf-like and longer than the others. Pappus cup-shaped.
Leaves oblong or lanceolate, narrowed into a short petiole or nearly sessile . . . . 1. *W. calendulacea.*
Leaves ovate or ovate-lanceolate, distinctly petiolate. Peduncles mostly longer than the leaves . . . . 2. *W. urticifolia.*
Outer involucral bracts not longer than the inner ones.
Pappus small and cup-shaped in the centre of the achene, and sometimes 1 or 2 teeth or small bristles from the angles.
Leaves lanceolate or linear, acuminate. Achenes compressed, not angled . . . . 3. *W. spilanthoides.*
Leaves ovate, oblong or lanceolate, obtuse. Achenes angled or winged . . . . 4. *W. verbesinoides.*
Pappus none or of 1 or 2 deciduous bristles.
Straggling perennial. Leaves ovate or broadly ovate-lanceolate 5. *W. biflora.*
Erect coarse annual. Leaves lanceolate . . . . 6. *W. asperrima.*

1. **W. calendulacea,** *Less.; DC. Prod.* v. 539. A low decumbent prostrate or creeping perennial, attaining sometimes 2 ft., sprinkled with short appressed hairs. Leaves oblong-lanceolate, 1 to 3 in. long, acute or obtuse, coarsely toothed or nearly entire, narrowed at the base but scarcely petiolate. Flower-heads nearly $\frac{3}{4}$ in. diameter, solitary, on long axillary or

terminal peduncles. Outer bracts of the involucre lanceolate or oblong, 4 or 5 lines long, inner ones smaller. Ray-florets about 10 to 12, rather broad, half as long again as the involucre. Achenes flattened, with a small denticulate cup-shaped pappus.—Wight, Ic. t. 1107.

Queensland. East coast, *A. Cunningham*, a single specimen with a single flower-head, the achenes of which I have been unable to examine and therefore the identity is in some measure doubtful. The species is frequent in India from Ceylon and the Peninsula to the Archipelago and northward to South China.

2. **W. urticifolia,** *DC. in Wight, Contrib.* 18 *and Prod.* v. 539. Erect or decumbent at the base, often 2 to 3 ft. high, more or less hirsute, the hairs not very rigid. Leaves petiolate, ovate or ovate-lanceolate, acuminate, slightly serrate, rather thin, often 3 to 4 in. long, narrowed or rounded at the base, the petiole rather short. Flower-heads small, on rather slender peduncles, the lower ones shorter than the leaves, the upper ones longer but scarcely paniculate. Involucre ovoid, the outer bracts (about 5) acute or acuminate, 3 to 6 lines long, the inner ones shorter. Ray-florets about 8, rather large; disk-florets not very numerous. Achenes somewhat compressed with acute edges, hairy at the top, with a small denticulate cup-shaped pappus, one of the teeth rarely produced into a bristle.—Wight, Ic. t. 1106; *W. Cunninghamii*, DC. Prod. v. 540.

N. Australia. Grassy rocky places, Goulburn island, *A. Cunningham;* islands of the Gulf of Carpentaria, *R. Brown.* The species is frequent in India.

3. **W. spilanthoides,** *F. Muell. Fragm.* v. 64. Very scabrous. Leaves very shortly petiolate, from broadly lanceolate to almost linear, mostly acuminate, with a few coarse irregular teeth especially near the base, or linear and entire, 2 to 4 in. long. Peduncles rigid, long and solitary or with a second shorter one. Involucres hemispherical, smaller than in *W. biflora*, the bracts rather numerous, nearly equal, the outer ones ovate or ovate-lanceolate, scarcely acuminate, the inner ones narrower, all shorter than the florets. Ray-florets 10 to 12 or even more, rather large. Achenes more or less flattened, often pubescent at the top. Pappus a minute denticulate cup, occasionally emitting a short deciduous bristle, but the whole often inconspicuous when the achene is ripe.

Queensland. Port Curtis, *M'Gillivray;* Rodd's Bay, *A. Cunningham;* Wide Bay, *Bidwill;* Burdekin, Burnett, and Brisbane rivers and Newcastle range, *F. Mueller;* Rockingham Bay and Rockhampton, *Dallachy;* Fitzroy river, *Bowman.*

N. S. Wales. Macleay river, *Herb. F. Mueller.*

In some specimens the leaves are few and all narrow-linear and the flower-heads smaller, these are probably old branches or from plants grown in a dry season or locality. In others from Keppel Bay and Broad Sound, *R. Brown*, the petioles are more distinct.

4. **W. verbesinoides,** *F. Muell. Herb.* Erect, rigid, and very scabrous, especially the foliage, with appressed rigid hairs. Leaves petiolate, oblong-lanceolate or ovate-lanceolate, obtuse, slightly toothed or entire, narrowed at the base, 1 to 3 in. long. Flower-heads shortly pedunculate, in irregular terminal panicles. Involucre ovoid-globular, the bracts nearly equal, ovate-oblong, obtuse. Scales of the receptacle obtuse. Ray-florets few and small. Achenes flattened or 3-angled, the edges acute or almost winged, tuberculate, with 1, 2, or 3 unequal short bristles thickened at the

base proceeding from the angles, and in the centre a small cup-shaped pappus occasionally emitting 1 or 2 small bristles but sometimes quite inconspicuous.

N. Australia, *F. Mueller;* Arnhem S. Bay, *R. Brown;* Finke river, *M'Douall Stuart's Expedition.*

5. **W. biflora,** *DC. in Wight, Contrib. Bot. Ind.* 18. A straggling half-scandent branching perennial, sometimes nearly glabrous, but more frequently slightly hoary or even quite white with closely appressed rigid hairs, especially on the under side of the leaves. Leaves petiolate, from broadly ovate to ovate-lanceolate, the lowest sometimes 3 or 4 in. long and very broadly cordate, the others usually smaller and often cuneate at the base, all acute or acuminate, slightly toothed, 3-nerved. Flower-heads most frequently 3 on short or long peduncles or sometimes more in a loose corymb. Involucral bracts nearly equal in about 2 rows. Ray-florets 10 to 12 or sometimes more, the ligules oblong, entire or minutely 3-toothed, 2 to 3 lines long. Achenes obtuse at the edges, without any pappus or with 1 to 3 small slender deciduous awns.—*Wollastonia biflora*, DC. Prod. v. 546; Wight, Ic. t. 1108; Benth. Fl. Hongk. 183, with the synonyms there adduced; *W. insularis* and *W. Forsteriana*, DC. Prod. v. 548.

N. Australia. Islands of the Gulf of Carpentaria, *R. Brown;* South Goulburn island, *A. Cunningham;* Keppel Bay, *Thozet.*

Queensland. Islands of Torres' Straits, *Henne;* Port Curtis and Lizard Islands, *M'Gillivray;* Bay of Inlets, *Banks and Solander;* Rockingham Bay, *Dallachy;* Brisbane river, Moreton Bay, *F. Mueller.*

N. S. Wales. Port Jackson, *R. Brown* and others; New England, *C. Stuart;* Clarence and Macleay rivers, *Beckler;* Lord Howe's Island, *Milne.*

This species is widely spread over East India, extending westward to east tropical Africa, and eastward to the Archipelago and south China.

6. **W. asperrima,** *Benth.* Coarse and erect, 1 to 2 ft. high, but apparently annual, very scabrous, especially the foliage, with rigid appressed hairs. Leaves petiolate, from oblong-lanceolate to linear-lanceolate, mostly acuminate, 2 to 3 in. long, irregularly toothed, narrowed at the base. Flower-heads several, in a loose terminal leafy panicle on rigid peduncles longer than the leaves. Involucre nearly hemispherical, the bracts rather numerous, acuminate, the outer ones 4 to 5 lines long, the inner ones scarcely shorter. Scales of the receptacle very acute and rigid. Ray-florets 10 to 12 or even more, oblong. Achenes with obtuse edges, not at all winged and without any pappus.—*Wollastonia asperrima*, Dcne. Herb. Timor, Descr. 86, and DC. Prod. v. 547 (?), from the character given.

N. Australia. Victoria river and Sturt's Creek, *F. Mueller.* If the identification with Decaisne's plant is correct it is also in Timor.

33. MOONIA, Arn.

(Pentalepis, *F. Muell.*)

Involucre of few (in the Australian species about 5) ovate or lanceolate nearly equal bracts. Receptacle chaffy. Ray-florets about as many as involucral bracts, female, ligulate. Disk-florets more numerous, hermaphrodite but sterile, tubular, 5-toothed. Anthers obtuse at the base. Style undivided.

Achenes of the ray flattened, the margins acute or winged. Pappus minute, cup-shaped, often produced into 2 short bristles. Achenes of the disk abortive.—Herbs with opposite leaves. Flower-heads pedunculate in terminal panicles or in the forks of the branches. Ray yellow.

A small genus containing, besides the Australian species, which are endemic, one or two from Ceylon and the Indian Archipelago. It differs from *Wedelia*, of which it has the habit, chiefly in the abortion of the disk-achenes. The original Ceylon species has more numerous involucral bracts and ray-florets, but does not otherwise differ in essential characters.

Leaves entire. Involucre 5 to 6 lines long . . . . 1. *M. trichodesmoides.*
Leaves coarsely toothed. Involucre about 3 lines long.
  Leaves mostly ovate-lanceolate or lanceolate, nearly sessile . . 2. *M. ecliptoides.*
  Leaves mostly ovate, petiolate . . . . 3. *M. procumbens.*

1. **M. trichodesmoides,** *Benth.* A rigid erect herb attaining 4 ft. in height, scabrous with short hairs or tubercles. Leaves nearly sessile, lanceolate, entire in the specimens seen. Flower-heads narrow-ovoid, in a terminal panicle. Involucral bracts usually 5, lanceolate, acuminate, about 5 or 6 lines long. Ray-florets 5 or 6, ligulate, entire or shortly 2-toothed. Achenes of the ray only seen young, then resembling those of *M. ecliptoides* but pubescent upwards and the 2 bristles of the pappus shorter and softer. Disk-florets as long as the involucre, with a simple style and abortive achenes as in other species.—*Pentalepis trichodesmoides*, F. Muell. in Trans. Bot. Soc. Edinb. vii. 496.

N. Australia. Nichol Bay, N.W. coast, *F. Gregory's Expedition.*

2. **M. ecliptoides,** *Benth.* A stout erect rigid herb, apparently several feet high, scabrous with appressed hairs, the smaller branches often slender and almost leafless. Leaves sessile or nearly so, the lower ones in our specimens ovate-lanceolate, acuminate, coarsely toothed, narrowed at the base, about 3 in. long, the upper ones smaller and narrow-lanceolate. Flower-heads small and numerous in a terminal irregularly corymbose panicle. Involucre ovoid-turbinate, about 3 lines long, of 4, 5 or rarely 6 leafy bracts, acute, and exceeding the disk-florets. Ray-florets as many as involucral bracts, the ligula obovate-oblong, usually 2-lobed. Scales of the receptacle narrow. Style of the disk-florets often long and hirsute. Achenes of the ray with broad incurved almost winged margins, notched at the end, the small cup-shaped pappus usually produced into 2 short bristles.—*Pentalepis ecliptoides*, F. Muell. in Trans. Bot. Soc. Edinb. vii. 496.

N. Australia. N.W. coast, *Bynoe*; Camden Harbour (*Marten?*), Hooker's and Sturt's Creeks, *F. Mueller*; Port Essington, *Armstrong.*

3. **M. procumbens,** *Benth.* Stems branched, diffuse procumbent or ascending, 1 to 2 ft. long. Leaves shortly petiolate, from ovate to lanceolate, coarsely toothed, 1 to 2 in. long, very scabrous with scattered rigid hairs or tubercles like many *Boragineæ*. Peduncles terminal or in the forks, the lower ones short, but mostly much longer than the leaves. Involucral bracts about 5 or 6, herbaceous, as long as or longer than the disk-florets. Ray-florets ovate, 2 to 3 lines long. Scales of the receptacle narrow, acute. Achenes of the ray thick, but compressed with acute margins, not winged.

Pappus small, cup-shaped, usually without bristles. Disk-achenes abortive. —*Wollastonia procumbens*, DC. Prod. v. 548.

N. Australia. Palm Bay, Croker's island, *A. Cunningham*: Port Essington, *Armstrong*.

34. SPILANTHES, Linn.

Involucral bracts in about two rows nearly equal, usually broad and thin. Receptacle chaffy, very conical. Ray-florets female, ligulate, or sometimes none. Disk-florets small, hermaphrodite, tubular, 5-toothed. Anthers obtuse at the base. Style branches truncate. Achenes of the ray 3-angled, those of the disk flattened, the angles or margins usually ciliate. Pappus of 2 or 3 short fine awns or bristles proceeding from the angles, sometimes wanting.—Herbs with opposite leaves. Flower-heads usually on long peduncles, the ray yellow or white.

The genus is widely dispersed over the tropical regions both of the New and the Old World. The two Australian species extend into the Indian Archipelago.

Flower-heads with yellow rays . . . . 1. *S. grandiflora.*
Flower-heads discoid, without rays . . . . 2. *S. anactina.*

1. **S. grandiflora,** *Turcz. in Bull. Mosc.* 1851. i. 185. Decumbent, loosely branched, glabrous or strigose-pubescent, attaining 1 to 2 ft. in length. Leaves shortly petiolate, ovate-lanceolate lanceolate or rarely linear, entire or with a few coarse teeth below the middle, 1 to 2 in. long, 3-nerved, glabrous or sprinkled with a few hairs. Involucral bracts ovate or ovate-lanceolate, scarcely 2 lines long. Ray-florets ligulate, yellow, twice as long as the involucre in the normal form but variable in size. Scales of the receptacle broad and concave, as long as the disk-florets. Bristles of the pappus scarcely thicker and but little longer than the cilia of the angles of the achenes.—*S. macroglossa*, F. Muell. Fragm. v. 63.

N. Australia. Sturt's Creek, *F. Mueller.*

Queensland. Thirsty Sound and Broad Sound, *R. Brown*; Burdekin river, *F. Mueller*; Rockhampton, *Dallachy*; Keppel Bay, *Thozet*; Brisbane river, Moreton Bay, *Mossman, F. Mueller.*

N. S. Wales. New England, *C. Stuart*; Clarence river, *Beckler*; Richmond river, *Fawcett.*

Var. *calva.* More glabrous; achenes smaller with few or no cilia on the angles, and the bristles of the pappus very minute or entirely wanting. To this belong the N. S. Wales and Moreton Bay specimens, but in others also, the achenes, when examined at the time of flowering, have often but few and small cilia and inconspicuous bristles.

Var. *brachyglossa.* Ray-florets very short.—*S. Acmella*, F. Muell. Fragm. v. 63, but scarcely of Linnæus. To this belong the Sturt's Creek specimens. The species, and especially this variety, is very nearly allied to the true *S. Acmella*, Linn., which should include *S. caulorrhiza* and *S. Africana*, DC., and is widely spread over tropical Asia and Africa, but appears distinct in habit, narrower leaves, and more conical usually larger flower-heads. We have received it also from the Indian Archipelago and the Philippine Islands.

2. **S. anactina,** *F. Muell. Fragm.* v. 63. Stems from a procumbent or decumbent base ascending to about 1 ft. high, simple or branched. Leaves linear or oblong-lanceolate, obtuse, entire, rather thick, 1 to 2 or rarely 3 in. long. Involucral bracts broad and thin, the margins often scarious and jagged. Scales of the receptacle broad. Ray-florets entirely wanting. Disk-

florets short and broad. Style-branches very long, flat, truncate. Achenes acutely edged or winged without cilia, the awns rather long for the genus.

N. Australia. Islands of the Gulf of Carpentaria, *R. Brown*, *Henne*. Also in Borneo, *Barber*.

35. GALINSOGA, Cav.

(Vargasia, *DC.*)

Involucre of few (about 5) broad nearly equal bracts. Receptacle conical, chaffy, the scales narrow. Ray-florets few, female, ligulate. Disk-florets hermaphrodite, tubular, 5-toothed. Anthers obtuse at the base. Style-branches acute. Achenes angular, slightly flattened. Pappus of several linear or oblong chaffy scales often plumose-ciliate or wanting, especially on the achenes of the ray.—Herbs with opposite leaves. Flower-heads small, pedunculate. Ray white.

A small genus from tropical and subtropical America, of which one species has spread as a weed of cultivation over many warm and temperate districts of the Old World, and has become introduced as such into Australia.

*1. **G. parviflora,** *Cav.*; *DC. Prod.* v. 677. An erect annual of 1 to 2 ft., glabrous or slightly hairy. Leaves petiolate, ovate or ovate-lanceolate. Peduncles slender. Involucre nearly hemispherical, about 2 lines diameter. Ray-florets about 5, with a small white ligula. Disk-florets short. Achenes small, slightly hairy. Pappus of the ray reduced to a few minute bristles or entirely wanting, that of the disk-achenes consisting of from 12 to 20 chaffy scales, more or less plumose-ciliate.

N. S. Wales. Port Jackson, *Woolls*; Clarence river, *Beckler*. A South American species, introduced with cultivation.

36. BIDENS, Linn.

Involucral bracts few, in about 2 or 3 rows, the outer ones herbaceous, the inner ones usually bordered with a thin whitish margin. Receptacle chaffy. Ray-florets neuter, sterile, ligulate or sometimes wanting; disk-florets tubular, hermaphrodite, 5-toothed. Anthers obtuse at the base. Style-branches with an acute or subulate point. Achenes broad and flattened or slender and 4-angled, often produced into a short beak. Pappus of 2 to 4 rigid retrorsely hispid persistent awns.—Herbs with opposite leaves. Flower-heads on terminal peduncles, the ray yellow or white.

Of the two sections of the genus one, *Platycarpæa*, belongs chiefly to the temperate regions of the northern hemisphere, the Australian species being identical with one of the common northern ones; the other, *Psilocarpæa*, is entirely American with the exception of the two Australian species, which are common weeds in all warm countries.

SECTION I. **Platycarpæa.**—*Achenes flat and rather broad.*

Leaves divided into 3 lanceolate serrate segments . . . . 1. *B. tripartita.*

SECTION II. **Psilocarpæa.**—*Achenes slender, 4-angled.*

Leaves mostly pinnate, with 3 or 5 segments. Ray white . . . . 2. *B. pilosa.*
Leaves mostly bipinnate. Ray yellow . . . . 3. *B. bipinnata.*

SECTION I. PLATYCARPÆA.—Achenes flat and rather broad.

1. **B. tripartita,** *Linn.; DC. Prod.* v. 594. A rather stout erect glabrous annual 1 to 2 ft. high. Leaves deeply cut into 3 lanceolate serrate segments. Flower-heads on terminal peduncles, erect or somewhat drooping. Involucre hemispherical, ½ to 1 in. diameter, the outer bracts sometimes nearly 1 in. long, leaf-like and spreading, the inner ones short broad, often shining and yellow on their edge. Florets either all tubular without any ray or with a few outer ligulate yellow florets. Achenes flat, crowned by 2 or 3, very rarely 4 awns.—*B. repens,* Don; DC. Prod. v. 595.

Victoria. Plains inundated in winter on the Snowy and Mitchell rivers, *F. Mueller.* The species is widely spread over the temperate regions of the northern hemisphere where, however, it is not so common as the closely allied *B. cernua,* which has undivided leaves and more drooping flower-heads.

SECTION II. PSILOCARPÆA.—Achenes slender, 4-angled.

2. **B. pilosa,** *Linn.; DC. Prod.* v. 597. An erect glabrous or slightly hairy annual, 1 to 2 ft. high. Branches angular. Leaves thin, pinnately divided, or the lower ones sometimes simple; segments 3 or sometimes 5, petiolulate, ovate or ovate-lanceolate, 1 to 2 in. long, serrate or rarely lobed. Flower-heads few, terminal, rather small, on slender peduncles. Involucral bracts 2 to 3 lines long. Ray-florets white, few and short or sometimes wholly wanting. Achenes slender, 4-angled, the inner ones often 6 to 7 lines long, the outer ones shorter.—Benth. Fl. Hongk. 183, with the synonyms adduced.

Queensland. Brisbane river, Moreton Bay, *F. Mueller.*
N. S. Wales. Newcastle, *R. Brown;* Port Jackson, *Woolls;* Blue Mountains, *Miss Atkinson;* Clarence river, *Beckler.*
Victoria. Yarra-Yarra, *F. Mueller.*
The species is very common as a weed over most warm countries both in the New and the Old World, and may therefore have been introduced into Australia by cultivation.

3. **B. bipinnata,** *Linn.; DC. Prod.* v. 603. A glabrous annual, resembling *B. pilosa,* but the leaf-segments are usually again divided into small deeply-toothed or lobed segments, the flower-heads are smaller, the involucral bracts less bordered, and the ray-florets small and yellow.

N. Australia. Victoria river, *F. Mueller;* islands of the Gulf of Carpentaria, *R. Brown.*
Queensland. Common on the sandy seacoasts, *R. Brown* and others; islands of Moreton Bay, *F. Mueller.*
The species is common in most warm countries both in the New and the Old World, and apparently truly indigenous in Australia.

37. GLOSSOGYNE, Cass.

(Diodontium, *F. Muell.*)

Involucral bracts few, in about 2 rows, narrow and nearly equal. Receptacle chaffy. Ray-florets female, ligulate, fertile or sometimes wanting; disk-florets tubular, hermaphrodite, 4- or 5-toothed. Anthers obtuse at the base. Style-branches ending in subulate points. Achenes narrow, usually flattened. Pappus of 2 to 4 rigid retrorsely hispid or smooth persistent awns.—Glabrous perennials, with alternate or opposite, pinnate or undivided narrow leaves. Flower-heads small on long terminal peduncles.

A small genus, extending over tropical Asia, to which have also been referred one or two Brazilian species. Of the three Australian species one is also in the Indian Archipelago, the other two are endemic. It is very closely allied to *Bidens*, and further investigation of the allied American plants may induce its reduction to a section of that genus.

Leaves alternate, pinnate. Ray-florets few. Disk-florets 4-toothed.
  Style-branches of the disk-florets very long. Achenes longitudinally striate, the awns erect or slightly spreading . . . . 1. *G. tenuifolia.*
  Style-branches rather short. Achenes transversely rugose, the awns very spreading or reflexed . . . . 2. *G. retroflexa.*
Leaves opposite, entire, slender. Ray-florets wanting. Disk-florets 5-toothed . . . . 3. *G. filifolia.*

1. **G. tenuifolia,** *Cass.; DC. Prod.* v. 632. Stock perennial, tufted, sometimes almost woody, with erect dichotomous stems, 6 in. to 1 ft. high, often almost leafless, or sometimes elongated decumbent and leafy at the base. Leaves chiefly radical or nearly so, the lowest sometimes cuneate and 3-lobed, all the others pinnately divided into 5 or 7 stiff linear segments either entire or 2- or 3-lobed. Flower-heads small, on long slender terminal peduncles. Involucre campanulate, not 2 lines long. Ray-florets small, yellow, spreading. Achenes linear, flattened, about 4 lines long, striate, with 3 or more numerous ribs on each face, crowned by 2 erect or slightly diverging awns. —*Bidens tenuifolia*, Labill. Sert. Austr. Caled. 44. t. 45; *Glossogyne pedunculosa*, DC. Prod. v. 632; *G. bidentidea*, F. Muell. in Linnæa, xxv. 402; *Bidens denudata*, Turcz. in Bull. Mosc. 1851, i. 183.

N. Australia. Goulburn islands, *A. Cunningham.*

Queensland. Northumberland islands and Shoalwater Bay, *R. Brown*; Cape Cleveland and Rodd's Bay, *A. Cunningham*; Cape York and Port Curtis, *M'Gillivray*; Rockingham Bay, *Dallachy*; Albany island and Brisbane river, Moreton Bay, *F. Mueller.*

N. S. Wales. Port Jackson, *R. Brown* and others; New England, *C. Stuart*; Clarence, Hastings and Macleay rivers, *Beckler*; Kiama, *Harvey*, and in the interior on Lachlan river, *A. Cunningham.*

S. Australia. Cudnaka and between Spencer's Gulf and Flinders range, *F. Mueller.*

The species is also in New Caledonia and in the Indian Archipelago, and differs but very little from the East Indian *G. pinnatifida.*

2. **G. retroflexa,** *F. Muell. Fragm.* i. 51. A tufted perennial, with precisely the habit and foliage of the ordinary form of *G. tenuifolia*, and the same inflorescence, involucre and florets, but the style-branches although filiform are shorter and glabrous, the achenes are thicker, transversely rugose, and the awns, usually 3, are very spreading or reflexed on the achene.

Queensand. Basaltic plains between Peak Range and Darling Downs, *F. Mueller.*

3. **G. filifolia,** *F. Muell. Herb.* Glabrous, erect, with 2- or 3-chotomous branches. Leaves opposite, linear-terete, slender, 1 to 2 in. long or even longer, undivided but clustered at the base of the branches. Flower-heads small, rather numerous in a loose corymbose terminal panicle. Involucre of 4 to 6 unequal lanceolate or linear bracts, the longest inner ones rarely exceeding 2 lines and shorter than the florets. Ray-florets wanting; disk-florets tubular, 5-toothed. Style thickened upwards, with 2 filiform papillose almost hairy branches. Achenes about as long as the involucre, ovate, flattened, with thin almost winged margins; awns almost divaricate, not

so long as the breadth of the achene, smooth or with a few reversed prickles. —*Diodontium filifolium*, F. Muell. in Hook. Kew Journ. ix. 19.

N. Australia. Sources of Hooker's Creek, *F. Mueller.*

38. NABLONIUM, Cass.

Involucre turbinate, with few membranous nearly equal bracts, the outer ones broad, the inner ones narrower, passing into the scales of the receptacle. Florets all hermaphrodite, tubular, 5-toothed. Anthers obtuse at the base. Style-branches somewhat flattened, truncate. Achenes flattened, with 2 rigid pungent divergent awns thickened at the base and continuous with the achene.—Small creeping herb, with radical leaves and 1-headed scapes.

The genus is limited to the single Australian species.

1. **N. calyceroides,** *Cass.; DC. Prod.* vi. 37. A small plant with creeping stolons, having something of the aspect of *Calotis scapigera*, with more or less of a white deciduous wool on the scape and foliage or quite glabrous. Leaves radical, linear or lanceolate, acute and often bearing a hair-like point, entire, narrowed at the base, rarely 1 in. long. Scape 1-headed, exceeding the leaves, leafless or rarely with 1 or 2 small linear bracts. Involucre about 2 lines long, the bracts with more or less transparent margins, the narrow inner ones jagged or lobed at the end. Florets not numerous. Anthers linear. Achenes glabrous, obovate or cuneate, the rigid thick divaricate awns very prominent in the fruiting-head. Testa of the seed cohering to the pericarp.—Hook. f. Fl. Tasm. i. 190. t. 48 A.

Tasmania. King's and other islands of Bass's Straits, *R. Brown* and others; Macquarrie Harbour, *Milligan*, *Gunn.*

39. TAGETES, Linn.

Involucral bracts in a single row, united in a toothed cup or tube. Receptacle flat, without scales. Florets of the ray female, ligulate; disk-florets tubular, 5-toothed. Anthers obtuse at the base. Style-branches flattened, obtuse or truncate, usually hirsute. Achenes linear, flattened. Pappus of several narrow very unequal scales or bristles.—Herbs, usually glabrous, the foliage and involucres bearing oblong or round transparent glands or vesicles filled with a strongly-scented oil. Leaves opposite, entire or pinnate. Flower-heads large and solitary or small and corymbose or paniculate. Ray yellow or orange-red.

An American genus, of which a few species have spread as weeds into the Old World.

*1. **T. glandulifera,** *Schranck; DC. Prod.* v. 644. A tall glabrous erect annual, attaining sometimes 6 to 8 ft., with numerous erect branches. Leaves pinnate with linear-lanceolate serrate segments. Flower-heads small and numerous in dense terminal panicles. Involucre tubular, about ½ in. long. Florets 6 to 12, scarcely exceeding the involucre, about 3 bearing each a small yellow ligula, the others tubular. Achenes linear, black, with a pappus of 5 or 6 chaffy bristles, one much longer than the rest.

Queensland. Brisbane river, *F. Mueller;* Neerkool Creek, *Bowman.*
N. S. Wales. Now much spreading on the Hunter and Nepean river, *F. Mueller.*
The species is of S. American origin, introduced with cultivation into Australia as into several of the warmer districts of the Old World.

40. ENHYDRA, Lour.

(Tetraotis, *Reinw.*)

Involucre of 4 broad leafy bracts closely enveloping the florets, the two outer ones larger than the inner ones. Receptacle conical, chaffy, the scales enclosing the florets and achenes. Ray-florets in several rows, female, with very short 3-toothed ligulas; disk-florets hermaphrodite but usually sterile, tubular, 5-toothed. Anthers obtuse at the base. Style-branches flattened, scarcely truncate. Achenes of the ray flattened, with obtuse edges, without any pappus, those of the disk usually abortive.—Herbs with opposite leaves. Flower-heads sessile in the forks of the stem or in the axils of the leaves.

The genus is limited to a very few species from tropical Asia, which may indeed be all varieties of one, and a few others from S. America. The Australian plant is evidently the same as the common Indian one.

1. **E. paludosa,** *DC. Prod.* v. 637. Glabrous or slightly scabrous-pubescent. Stems elongated, creeping and rooting in the mud, the flowering branches ascending, simple or forked. Leaves shortly petiolate, oblong or lanceolate, coarsely toothed or nearly entire, narrowed at the base, or sometimes, especially those under the forks, slightly hastate, the petiole often dilated at the base and stem-clasping. Involucral bracts broadly ovate, the 2 outer larger ones 3 to 6 lines long, exceeding the florets.—*Tetraotis paludosa,* Reinw. in Blume, Bijdr. 892; *Enhydra longifolia* and *E. Heloncha,* DC. Prod. v. 637; *E. Woollsii,* F. Muell. Fragm. iii. 139.

N. S. Wales. In marshes, sometimes quite under water, South Head, *Bauer;* Manly beach, *Woolls.* Also in *Leichhardt's* collection.
The species is common in E. India and the Archipelago, and may not be really distinct from the original *E. fluctuans,* Lour. The Australian specimens have the leaves more narrowed at the base than is usual in Asia, but precisely the same form occurs also in India.

41. FLAVERIA, Juss.

Flower-heads collected in dense clusters or compound heads surrounded by a few leafy bracts or floral leaves. Involucres cylindrical or compressed, with few conduplicate dry bracts. Florets few, the female ones often solitary in the involucre with a small ligula, hermaphrodite florets tubular, 5-toothed. Anthers obtuse at the base. Style-branches truncate. Achenes somewhat compressed. Pappus none.—Herbs with opposite leaves. Clusters of flower-heads terminal or sessile in the forks. Florets yellow.

Besides the Australian species, which is endemic, there are a few American ones, one of which, from S. America, is closely allied to the Australian one.

1. **F. australasica,** *Hook. in Mitch. Trop. Austr.* 118. An erect rigid perfectly glabrous pale green annual, usually about 1 ft. but attaining sometimes 2 or 3 ft. in height, with opposite or dichotomous divaricate branches. Leaves linear or linear-lanceolate, 1 to 2 in. long, entire or with small remote

teeth, the lower ones narrowed towards the base but stem-clasping, the upper ones much dilated at the base. Flower-heads numerous, in dense globular or hemispherical sessile clusters often ½ in. diameter, surrounded by a few broad ovate-acuminate or lanceolate floral leaves longer than the clusters. Involucres 2 to 3 lines long, the outer ones of each cluster usually consisting of 2 or 3 obtuse narrow bracts and including a single ligulate floret, the others containing 2 to 6 disk-florets, the corollas slightly dilated over the achene and glandular at the base. Achenes prominently ribbed.—F. Muell. Fragm. i. 183.

N. Australia. Nichol Bay, N.W. coast, *F. Gregory's Expedition;* Victoria river and Hooker's Creek, *F. Mueller;* islands of the Gulf of Carpentaria, *R. Brown;* in the interior, *M'Douall Stuart's Expedition;* Albert river, *Henne.*

Queensland. Balonne river, *Mitchell.*

There is very little to distinguish this from the common S. American *F. Contrayerva*, except the narrow leaves and the more sessile and compact clusters of flower heads with broader floral leaves.

TRIBE VII. ANTHEMIDEÆ.—Leaves alternate, often much cut, rarely quite entire. Flower-heads heterogamous, the florets of the circumference female, ligulate, tubular or without corollas, those of the disk hermaphrodite or male, tubular, or very rarely the heads homogamous. Anthers obtuse or scarcely pointed at the base, usually short. Style of *Senecionideæ*. Pappus none or reduced to a small cup, ring or auricle, or rarely of flat chaffy scales.

A few of the genera have nearly the aspect of the *Asteroid* genera allied to *Brachycome*, but are readily known by the short truncate style-branches, a very few with entire linear leaves approach some of the smaller *Gnaphalieæ*, but have very different anthers. The Australian genera belong all to the group of *Cotuleæ*, which are never radiate; the following three species, however, of the typical European *Anthemideæ*, with radiate flower-heads, have been more or less introduced as weeds.

Anthemis Cotula, Linn.; (*Maruta Cotula*, DC. Prod. vi. 13.) A glabrous annual emitting a disagreeable smell when rubbed, with alternate once twice or thrice pinnate leaves with very narrow lobes. Flower-heads loosely corymbose with white sterile rays, a very conical receptacle with small chaffy scales between the florets, and small achenes without any pappus.—N. S. Wales, S. Australia, and W. Australia.

Chrysanthemum segetum, Linn.; DC. Prod. vi. 64. A glabrous annual, with alternate leaves, the lower ones obovate and petiolate, the upper ones narrow and stem-clasping, generally deeply-toothed at the end. Flower-heads large, on terminal peduncles, with golden-yellow female rays, the receptacle nearly flat, without scales, the achenes small without any pappus.—N. S. Wales and Victoria.

Chrysanthemum Parthenium, Pers.; (*Pyrethrum parthenium*, DC. Prod. vi. 58.) A perennial with a short stock and erect flowering-stems. Leaves pinnate, with ovate or oblong, toothed or pinnatifid segments. Flower-heads numerous in a terminal corymb, with white female rays, the receptacle nearly flat, without scales, the achenes small, crowned by a minute toothed border.—Port Jackson.

42. COTULA, Linn.

(Gymnogyne, *Steetz;* Strongylospermum, *Less.;* Pleiogyne, *C. Koch;* Symphyomera *and* Ctenosperma, *Hook. f.;* Leptinella, *Cass.*)

Involucre hemispherical or campanulate, with few nearly equal bracts, in about 2 rows. Receptacle flat, convex or conical, without scales. Florets of the circumference in 1 or several rows, female, without any or with a short broad or conical corolla. Disk-florets numerous, tubular, hermaphrodite, sometimes sterile, 4- or 5-toothed. Anthers obtuse at the base. Style-branches obtuse or truncate, or the style sometimes undivided. Achenes flattened, sometimes winged, without any pappus.—Herbs, usually small or decumbent, with alternate, entire lobed or dissected leaves. Flower-heads small, pedunculate.

A considerable genus, dispersed over the warmer and temperate regions of the Old World, with a few American species. Of the nine Australian species, one is common to the extratropical regions both of the northern and southern hemispheres, another is found in S. Africa, and a third in New Zealand, the remaining six appear to be endemic.

SECT. I. **Cotula.**—*Receptacle flat or convex. Achenes of the female florets on long stalks, in a single row. Female florets without any corolla.*

Involucral bracts very broad. Disk-achenes not winged. Leaves not sheathing at the base, filiform, entire . . . . 1. *C. filifolia.*
Involucral bracts ovate or oblong. Disk-achenes mostly winged. Leaves sheathing at the base.
  Plant of 1 to 2 in. with filiform entire leaves . . . . 2. *C. integrifolia.*
  Plant often attaining 6 in. or more. Leaves mostly lanceolate or oblong and toothed . . . . 3. *C. coronopifolia.*

SECT. II. **Strongylosperma.** *Receptacle flat or convex. Achenes of the female florets numerous, in several rows, sessile or stipitate. Female florets without any corolla.*

Achenes of the female florets with broad thin wings. Leaves linear or filiform, entire . . . . 4. *C. gymnogyne.*
Achenes of the female florets with narrow thick wings or obtuse edges. Leaves dissected.
  Stems slender. Peduncles filiform, mostly longer than the leaves . 5. *C. australis.*
  Stems short, stout. Peduncles thick, mostly shorter than the leaves . . . . 6. *C. alpina.*

SECT. III. **Leptinella.**—*Receptacle conical. Achenes of the ray in several rows, sessile. Female florets with a short corolla.*

Glabrous or nearly so. Female florets inflated . . . . 8. *C. reptans.*
Stems woolly-hairy.
  Leaves simply pinnate. Female florets conical . . . . 9. *C. filicula.*
  Leaves twice pinnate. Female florets inflated . . . . 7. *C. Drummondii.*

SECTION I. COTULA.—Receptacle flat or convex. Achenes of the female florets in a single row, on long stalks. Female florets without any corolla.

At the time of flowering the female florets sometimes appear nearly sessile, but the stalks grow out considerably as the achene ripens, and usually persist after it has fallen off.

1. **C. filifolia,** *Thunb.; DC. Prod.* vi. 77. A small much-branched annual, glabrous or sprinkled with a few hairs, with slender ascending stems, rarely above 6 in. long. Leaves narrow-linear or filiform, entire, slightly dilated and stem-clasping at the base, mostly ½ to 1 in. long. Peduncles long and slender, sometimes dilated under the flower-head, as in the section or genus *Cenia.* Flower-heads smaller than in *C. coronopifolia.* Involucral bracts few, broad, very obtuse, with scarious margins. Receptacle flat or slightly convex. Female florets in a single row, without any corolla; disk-florets scarcely dilated at the base. Achenes of the female florets, when ripe

supported on a stipes often as long as the involucre and persistent, bordered by a broad thin wing.. Achenes of the disk flat and smooth, the margins scarcely thickened but not at all winged.

Victoria. Port Phillip and inundated meadows near Brighton, *F. Mueller.*
Tasmania. Islands of Kent's group, Bass's Straits, *R. Brown.*
S. Australia. Murray river, Holdfast Bay, Gawler river, and Crystal Brook, *F. Mueller.*
W. Australia. King George's Sound, *R. Brown.*

The species is also in S. Africa. It has precisely the aspect of *C. gymnogyne*, but with a very different floral structure.

2. **C. integrifolia,** *Hook. f. Fl. Tasm.* i. 192. *t.* 50 B. A little, glabrous scarcely branched annual, of 1 to 2 in., possibly a reduced form of *C. coronopifolia.* Leaves entire, linear, obtuse, rather thick, dilated at the base into a short sheath. Peduncles terminal, slender. Flower-heads not 2 lines diameter. Involucral bracts ovate or oblong, obtuse, with scarious margins. Florets and achenes of *C. coronopifolia.*

Tasmania. Moist ground near George Town, *Gunn.*

3. **C. coronopifolia,** *Linn.; DC. Prod.* vi. 78. Glabrous and diffuse, the stems rooting at the base and ascending from ½ to nearly 1 ft. Leaves lanceolate oblong or almost linear, coarsely toothed, pinnatifid or almost entire, 1 to 2 in. long, dilated at the base into a short sheath round the stem. Flower-heads 3 to 5 lines diameter, on peduncles longer than the leaves. Involucral bracts oblong-linear. Receptacle flat or slightly convex. Female florets in a single row, on flattened pedicels, half as long as the involucre, the ovary bordered by a transparent wing notched at both ends, the style very short in the terminal notch, without any corolla; disk-florets exceedingly numerous, on much shorter persistent pedicels, the corolla tubular, more or less dilated above the ovary, 4-toothed. Achenes of the female florets nearly ¾ line long, including the thickish spongy wing surrounding them, those of the disk smaller, with a narrower wing.—Steetz in Pl. Preiss. i. 434; Hook. f. Fl. Tasm. i. 191.

N. S. Wales. Port Jackson, *R. Brown;* Twofold Bay, *F. Mueller.*
Victoria. Common in wet pastures, *F. Mueller* and others.
Tasmania. Common in wet pastures, even in brackish water, *J. D. Hooker.*
S. Australia. Near Adelaide and Lofty Range, *F. Mueller;* Kangaroo Island, *Waterhouse.*
W. Australia. Swan River, *Preiss, n.* 128; *Drummond, n.* 33, 62, 379; Hay river and Cape Naturaliste, *Oldfield.*

The species extends over New Zealand, extratropical S. America, S. Africa, and some parts of Europe, especially near the sea.

SECTION II. STRONGYLOSPERMA.—Receptacle flat or convex. Achenes of the ray numerous, in several rows, sessile or stipitate. Ray-florets (in the Australian species) without any corolla.

4. **C. gymnogyne,** *F. Muell. Herb.* A slender, glabrous, simple or branched annual, rarely 6 in. high, closely resembling *C. filifolia* in aspect. Leaves linear, almost filiform, often above 1 in. long, dilated and sheathing at the base. Flower-heads 2 to 3 lines diameter or rather larger when in

fruit, on filiform peduncles. Receptacle thick, convex, almost hemispherical. Female florets numerous, in several series, without any corollas; disk-florets much less numerous, the corollas attenuate at the base, the styles apparently perfect or more or less abortive. Achenes of the female florets sessile, broadly winged, with a broad truncate base; those of the disk abortive.—*Gymnogyne cotuloides*, Steetz in Pl. Preiss. i. 432.

W. Australia. Swan River, *Drummond, n.* 380; *Preiss, n.* 101; Kalgan and Gordon rivers, Port Gregory, Champion Bay, Murchison river, *Oldfield.*

5. **C. australis,** *Hook. f. Fl. N. Z.* i. 128. Slender and diffuse, with an apparently perennial creeping rhizome, more or less clothed with long soft hairs or nearly glabrous. Leaves pinnate, with small pinnæ, entire or deeply 3-lobed or pinnatifid, the segments mostly mucronate-acute. Flower-heads small, on slender peduncles. Involucral bracts linear-oblong. Receptacle nearly flat. Female florets numerous, in several rows, without any corollas; disk-florets slightly dilated at the base, 4-toothed, fertile. Achenes of the female florets bordered by a narrow wing, not cordate at the base, on pedicels nearly as long as themselves. Achenes of the disk not winged, on very short pedicels.—Hook. f. Fl. Tasm. i. 191. t. 50 A; *Anacyclus australis*, Sieb. Pl. Exs.; *Strongylospermum australe*, Less. Syn. Comp. 261; DC. Prod. vi. 82; *Pleiogyne australis*, C. Koch in Bot. Zeit. 1843, 40; Sond. in Linnæa, xxv. 484.

N. S. Wales. Port Jackson, to the Blue Mountains, *R. Brown*, *Sieber*, and others, invariably following sheep, *C. Moore;* Clarence river, *Beckler.*
Victoria. Yarra river, *F. Mueller* and others; Creswick diggings, *Whan.*
Tasmania. Moist banks near Hobarton, *J. D. Hooker.*
S. Australia. Near Adelaide, *F. Mueller*
W. Australia. Between Swan River and King George's Sound, *Drummond.*

The species is also in New Zealand and in the island of Tristan d'Acunha; it is very near the common Asiatic and African *C. anthemoides*, Linn., but in that species the peduncles are usually much shorter, the achenes less stipitate, and the female florets have almost always a short corolla, which I never find in *C. australis* even on Sieber's specimens, although described by De Candolle, who copied from Lessing.

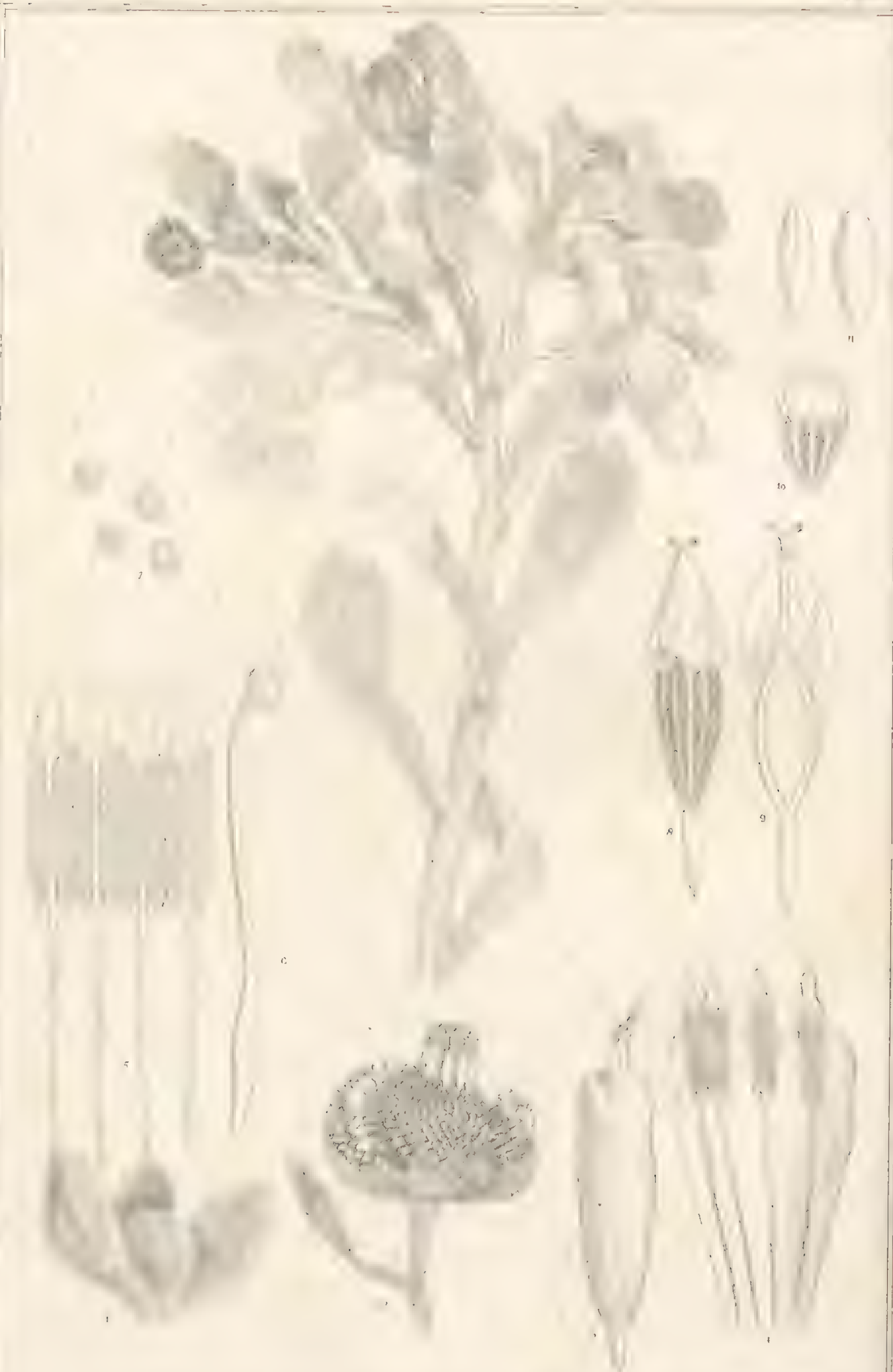
6. **C. alpina,** *Hook. f. Fl. Tasm.* i. 192. *t.* 51 A. A small but stout glabrous perennial, shortly creeping or tufted. Leaves deeply pinnatifid or pinnate, with oblong-linear acute entire or 2- or 3-toothed segments. Flower-heads, when in fruit, fully 3 lines diameter, on thick hollow peduncles, often shorter than the leaves. Involucral bracts ovate-oblong. Receptacle flat or slightly convex. Female florets in several rows, without any corollas. Achenes of the female florets sessile, bordered by rather thick wings, those of the disk usually abortive.—*Ctenosperma alpinum*, Hook. f. in Hook. Lond. Journ. vi. 115.

Victoria. Cobberas mountains, *F. Mueller.*
Tasmania. Subalpine and alpine situations near Marlborough, *Gunn.*

Section III. Leptinella.—Receptacle conical. Achenes of the ray in several rows, sessile. Female florets with a short corolla.

7 **C. Drummondii,** *Benth.* A perennial, with prostrate or creeping

Tab. V



F. Schonfeld del et lith

F. Mueller direxit

Leptinella Featherstonii. F.M.

stems, densely clothed with long woolly hairs. Leaves twice pinnate, with oblong-linear or cuneate, toothed or pinnatifid segments. Flower-heads like those of *C. reptans*, on peduncles usually shorter than the leaves. Involucral bracts not so broad as in *C. reptans*, the corolla of the female florets short and inflated, larger in proportion to the achenes than in that species. Achenes not seen ripe, but apparently like those of *C. reptans.*

W. Australia, *Drummond, 3rd Coll. n.* 113; Don river, *Oldfield.*

The species is evidently near *C. reptans*, but much larger than the cut-leaved forms of that species, with the leaves much more cut.

8. **C. reptans,** *Benth.* A slender creeping perennial, glabrous or sprinkled with a few soft hairs, especially on the peduncles. Leaves pinnate, with ovate segments, toothed or pinnately divided into short linear lobes. Flower-heads rarely above 2 lines diameter, on peduncles usually longer than the leaves. Involucral bracts nearly orbicular. Receptacle conical. Female florets in several rows, the corollas very short and broad, inflated, contracted at the orifice, obliquely 2- or 3-toothed, the style shortly exserted. Achenes of the female florets sessile, flattened, with thickened obtuse margins, scarcely forming distinct wings, obtusely notched at the top, those of the disk usually abortive.—*Strongylosperma reptans*, Benth. in Hueg. Enum. 60; DC. Prod. vi. 82; *Pleiogyne reptans*, C. Koch in Bot. Zeit. 1843, 40; Sond. in Linnaea, xxv. 484; *Leptinella intricata*, Hook. f. in Hook. Lond. Journ. vi. 117, and Fl. Tasm. i. 193. t. 52 B; *Leptinella multifida*, Hook. f. in Hook. Lond. Journ. vi. 118; *Pleiogyne multifida*, Sond. in Linnæa, xxv. 484.

N. S. Wales. Twofold Bay, *F. Mueller.*

Victoria. Wet places, from Gipps' Land to the Yarra, *F. Mueller.*

Tasmania. Port Dalrymple, *R. Brown*; marshes in various parts of the island, *J. D. Hooker* and others.

S. Australia. Between Rivoli Bay and Mount Gambier, *F. Mueller.*

Var. *major.* Rather coarser, usually glabrous; petioles and peduncles longer; leaf-segments obovate and almost succulent; flower-heads larger.—*Leptinella longipes*, Hook. f. in Hook. Lond. Journ. vi. 117, and Fl. Tasm. i. 193. t. 52 A.—Victoria and Tasmania.

9. **C. filicula,** *Hook. f. Herb.* A small and stout perennial, tufted, diffuse or shortly creeping, more or less clothed with long soft or woolly hairs. Leaves pinnate, with linear-oblong or cuneate, entire or toothed segments. Flower-heads about 3 lines diameter when in fruit, on stout peduncles rarely exceeding the leaves. Involucral bracts ovate. Receptacle conical. Female florets in many rows, with small conical corollas, oblique and 2-toothed at the orifice, the style shortly exserted. Achenes of the female florets sessile, bordered by thick wings, scarcely distinguishable from the achene itself; those of the disk abortive.—*Symphyomera filicula*, Hook. f. in Hook. Lond. Journ. vi. 116; *Leptinella filicula*, Hook. f. Fl. Tasm. i. 194. t. 51 B.

Victoria. Mounts Wellington and Useful, Buffalo ranges, Baw-Baw mountains, at an elevation of 4000 to 5000 ft,, *F. Mueller.*

Tasmania. Hampshire hills, Mount Wellington, Christmas Rock, *Gunn.*

43. SOLIVA, Ruiz and Pav.

(Gymnostyles, *Juss.*)

Involucral bracts in about 2 rows nearly equal, with scarious margins. Receptacle flat, without scales. Florets of the circumference in several rows, female, without any corolla; disk-florets tubular, tapering at the base, 2- or 3-toothed. Anthers obtuse at the base. Style-lobes short, truncate. Achenes of the female florets flattened, bordered by a thick wing, without any pappus but the wings tapering into the rigid persistent style or produced into two divaricate points or prominent angles, those of the disk usually abortive.—Small diffuse herbs. Leaves alternate, usually finely dissected. Flower-heads sessile.

A small genus, apparently limited to the warmer regions of America, except where introduced with cultivation.

1. **S. anthemifolia,** *R. Br. in Trans. Linn. Soc.* xii. 102. Stems very much shorter than the leaves, forming a dense tuft. Leaves petiolate, 2 to 4 in. long, twice or even thrice pinnate with linear or linear-acute, entire or 3-fid segments, the primary ones often distant along the petiole, clothed with long soft hairs or nearly glabrous. Flower-heads closely sessile and clustered on the short stems, nearly globular when in fruit, $\frac{1}{4}$ to $\frac{1}{2}$ in. diameter. Involucral bracts oblong or lanceolate. Achenes numerous, bordered by a thick transversely rugose wing, which tapers into a rigid style longer than the achene itself, without any lateral angles or points.—DC. Prod. vi. 142; *Gymnostyles anthemifolia*, Juss., according to Br. l. c.

Queensland. Brisbane river, Moreton Bay, *F. Mueller.*

N. S. Wales. Port Jackson, *Woolls*, but only in cultivated ground, and probably introduced from S. America, *R. Brown.*

The species is also in Brazil, Gardner's specimens from Rio Janeiro, n. 225, being precisely the same as the Australian ones. It is also very near *S. acaulis*, Hook. and Arn., from Buenos Ayres, but in that species the wings of the achenes are broader, thinner, and produced into prominent angles or short horns. The pedunculate species referred to the genus, *S. pygmæa*, H. B. and K. (including *S. Mexicana*, DC., and perhaps *S. pedicellata*, Ruiz and Pav.), does not appear to differ from a true *Cotula.*

44. MYRIOGYNE, Less.

(Centipeda, *Lour.*; Sphæromorphæa, *DC. partly.*)

Involucral bracts in about 2 rows, nearly equal, scarious at the edges. Receptacle flat or slightly convex, without scales. Florets of the circumference in many rows, female, with short tubular corollas; disk-florets hermaphrodite, fertile, broadly campanulate, 4-lobed. Anthers short, obtuse at the base. Style-lobes very short, obtuse or truncate. Achenes not at all or scarcely compressed, with 3 or 4 very prominent obtuse ribs or angles, without any pappus. Herbs with alternate usually toothed leaves. Flower-heads small, sessile, lateral or in a short terminal raceme.

A small genus, chiefly S. Asiatic, with one species from extratropical S. America. Of the two Australian species, one is the common Indian one, the other is endemic. The genus has

been united by J. D. Hooker with *Cotula*, but the peculiar habit and the shape of the achenes appear to me to be sufficient characters to retain it as distinct.

Flower-heads all or nearly all sessile and lateral	1. *M. minuta.*
Flower-heads in terminal leafless racemes	2. *M. racemosa.*

1. **M. minuta,** *Less. in Linnæa*, vi. 219. A prostrate branching annual or perhaps sometimes a perennial of short duration, the slender stems 2 to 3 in. or rarely 6 in. long in tropical regions, glabrous or clothed with short white woolly intricate hairs, in most of the extratropical Australian specimens more robust, glabrous, attaining sometimes 1 ft. Leaves oblong, ¼ to ½ in. long, narrowed at the base or almost petiolate, toothed or almost pinnatifid. Flower-heads 1½ to 2 lines diameter, solitary, at first terminal, but soon becoming leaf-opposed, closely sessile or rarely accompanied by a second pedunculate one (*i. e.* by a short 1-headed flowering branch with the floral leaf abortive); florets very minute, the female corollas scarcely above a third of the length of their ovaries. Styles of the disk-florets with very short truncate lobes. Achenes slightly hairy.—DC. Prod. vi. 139, with the numerous synonyms adduced; Hook. f. Fl. Tasm. i. 194; *M. Cunninghamii*, DC. Prod. vi. 139; F. Muell. Pl. Vict. t. 41; *Centipeda orbicularis*, Lour.; Miq. Fl. Ned. Ind. ii. 89; *Sphæromorphæa centipeda*, DC. Prod. vi. 140; *Sphæromorphæa Russeliana*, DC. l. c.; Deless. Ic. Sel. iv. t. 49; *Cotula minuta*, Forst. Prod. 57; Hook. f. Handb. N. Zeal. Fl. 144.

N. Australia. Arnhem's Land, *F. Mueller.*

Queensland. Broad Sound and Shoalwater Bay, *R. Brown*; Port Curtis, *M'Gillivray*; Suttor river, *Thozet*; Rockhampton, *Dallachy* and others.

N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown*, *Sieber*, *n.* 491, and others; Clarence river, *Beckler*; in the interior, Lachlan and Darling rivers, etc., *A. Cunningham*, *Victorian and other Expeditions* (these specimens generally very robust with larger flower-heads).

Victoria. Very common in marshy places, *F. Mueller* and others.

Tasmania. Waste places, cultivated ground, etc., *J. D. Hooker.*

S. Australia. Common on the Murray and thence to St. Vincent's Gulf, *F. Mueller* and others; Kangaroo island, *Waterhouse.*

W. Australia. Swan River, *Drummond*, *n.* 89, 179, 183; Capel and Murchison rivers, *Oldfield.*

2. **M. racemosa,** *Hook. in Mitch. Trop. Austr.* 353. Glabrous, with ascending or erect stems, ½ to 1½ ft. high. Leaves linear or linear-lanceolate, acutely toothed, slightly narrowed towards the base or the lower ones petiolate. Flower-heads small, in short terminal leafless racemes. Involucral bracts oblong. Ray-florets minute, almost globular. Styles of the disk-florets with very short obtuse lobes. Achenes very prominently 4- or 5-angled, the angles ciliate.

Queensland, *Bowman*; Maranoa river, *Mitchell*: Burdekin and Gilbert rivers and Newcastle range, *F. Mueller*. The inflorescence is that of *Dichrocephala*, but the achenes and florets are very differently shaped.

45. ABROTANELLA, Cass.

(Scleroleima *and* Trineuron, *Hook. f.*)

Involucral bracts few, in about 2 rows, nearly equal or the outer ones shorter. Receptacle nearly flat, without scales. Florets all tubular, those of the circumference female, 3- or 4-toothed, those of the disk hermaphrodite or male, 4-toothed. Anthers obtuse or slightly pointed at the base. Style-lobes short, truncate. Achenes 4-angled or flattened, not winged, without any pappus.—Dwarf perennials usually densely tufted with closely imbricate small leaves, more rarely with short decumbent or ascending stems and alternate entire leaves. Flower-heads solitary, or few in small corymbs, sessile or shortly pedunculate.

The genus ranges over New Zealand and the Antarctic regions generally; the three Australian species appear to be endemic.

Leaves closely imbricate, acuminate, about ¼ in. long. Florets about
 3 or 4 in each head . . . . 1. *A. forsterioides.*
Leaves spreading. Florets numerous in each head.
 Leaves ½ in. long. Peduncles not exceeding the leaves . . . . 2. *A. nivigena.*
 Leaves ¾ to 1½ in. long. Flowering-stems 2 to 4 in. high, with
  more than one flower-head . . . . 3. *A. scapigera.*

1. **A. forsterioides,** *Hook. f. Handb. N. Zeal. Fl.* 139. A densely tufted plant forming often large patches. Leaves persistent and densely imbricate on the short closely-packed stems, oblong with a broad sheathing base, subulate-acuminate, 2 to 3 lines long, with an obscurely denticulate cartilaginous margin. Flower-heads small and solitary on each branch, on a peduncle at first exceedingly short, at length nearly as long as the leaves. Involucre of 3 to 5 linear or oblong obtuse unequal bracts, usually shorter than the leaves. Florets 3 or 4, of which 1 male and sterile and 2 or 3 female. Achenes 4-angled.—*Scleroleima forsterioides*, Hook. f. in Hook. Lond. Journ. v. 444. t. 14, and Fl. Tasm. i. 195.

Tasmania. Summit of the Table Mountain, *R. Brown*, and of all the mountains above 4000 ft., forming green velvety cushions, *J. D. Hooker.*

The habit is nearly that of *Pterygopappus*, but it may be at once recognized by the longer narrower leaves, independently of the generic characters.

2. **A. nivigena,** *F. Muell. Herb.* A small glabrous plant forming dense tufts or the stems shortly diffuse but not exceeding 2 or 3 in. Leaves linear, obtuse, about ½ in. long, sheathing at the base, thick and smooth as in the other species. Flower-heads solitary, on peduncles shorter than the leaves. Involucre not 2 lines long, the bracts very obtuse or truncate, a few of the outer ones shorter. Florets and achenes apparently like those of *A. scapigera*, but only seen very young.—*Trineuron nivigenum*, F. Muell. in Trans. Phil. Soc. Vict. i. 105, in Hook. Kew Journ. viii. 149, and Pl. Vict. t. 40.

Victoria. Snowy summits of the Munyong mountains, at an elevation of 5000 to 6000 ft., *F. Mueller.*

3. **A. scapigera,** *F. Muell. Herb.* Stems creeping or tufted at the base, ascending to from 2 to 4 in., glabrous. Leaves oblong-linear, narrowed below the middle, sheathing at the base, ¾ to 1½ in. long, crowded at the base of the flowering stems with a few smaller ones under the peduncles. Flower-heads few, in a small terminal leafy corymb. Involucre nearly 2 lines long, the bracts oblong, nearly equal. Florets of the ray in 2 or 3 rows, those of the disk about the same number. Anthers shortly pointed at the base. Achenes of the female florets oblong, compressed, those of

the disk apparently smaller, but not seen perfect.—*Trineuron scapigerum*, F. Muell. in Trans. Phil. Inst. Vict. ii. 70, and in Hook. Kew Journ. ix. 301, Hook. f. Fl. Tasm. ii. 364.

Tasmania. Crevices of rocks, summit of Mount Lapeyrouse, *Oldfield*.

46. CERATOGYNE, Turcz.

(Diotosperma, *A. Gray*.)

Involucre cylindrical, of few oblong bracts, green with scarious edges. Receptacle without scales. Florets of the circumference few, female, filiform, 2- or 3-toothed or shortly ligulate; disk-florets few, hermaphrodite, sterile, tubular, 3- or 4-toothed. Anthers short, thin (obtuse at the base?). Style-lobes slender, acute, hispid. Achenes of the ray large, flat, bordered by herbaceous wings, involute on the margins and produced at the top into incurved auricles; those of the disk abortive.—Small annual. Leaves alternate. Flower-heads small, terminal or axillary.

The genus is limited to a single species endemic in Australia.

1. **C. obionoides,** *Turcz. in Bull. Mosc.* 1851. ii. 69. An annual with erect slender branching stems not exceeding 6 in., and often much smaller, more or less hirsute with soft simple hairs. Leaves petiolate, obovate or oblong, under ½ in. long, the upper ones small, narrow and sessile. Flower-heads nearly sessile or on very short axillary leafy peduncles. Involucre a little more than 1 line long, of 4 to 6 oblong bracts. Florets about as long as the involucre, of which 3 or 4 females and about as many sterile central ones. Achenes of the female florets very soon growing out to at least twice the length of the involucre, remarkable for their broad herbaceous wings, the incurved ciliate auricles at the top as long as the corolla.—*Diotosperma Drummondii*, A. Gray in Hook. Kew Journ. iv. 275.

W. Australia, *Drummond, 5th Coll. Suppl. n.* 56.

47. ELACHANTHUS, F. Muell.

Involucre of few oblong bracts with scarious edges, nearly equal or with 1 or 2 outer short ones. Receptacle small, without scales. Florets of the circumference several, female, tubular, slender but broader towards the base, minutely 2- or 3-toothed or almost entire. Disk-florets few, hermaphrodite but sterile, slender, 3- or 4-toothed. Anthers short, obtuse at the base. Style undivided or with linear hispid branches. Achenes of the female florets nearly terete, with a pappus of several narrow-lanceolate chaffy scales; those of the disk slender, abortive, with a reduced pappus.—Small annual. Leaves alternate, entire. Flower-heads terminal.

The genus is limited to a single species endemic in Australia. With a habit approaching that of *Millotia*, *Quinetia*, and other small *Gnaphalieæ*, the florets and anthers, as in *Isoetopsis*, indicate a near affinity with *Cotula* and *Myriogyne*, and although pappus scales are rare in the tribe, they occur also in a few of the subtribe *Tanaceteæ*.

1. **E. pusillus,** *F. Muell. in Linnæa*, xxv. 411. A slender erect branching annual attaining 3 or 4 in. but sometimes much smaller, glabrous or

slightly pubescent especially under the inflorescence. Leaves small, narrow-linear. Involucres at first cylindrical, at length turbinate, 2 to 2½ lines long. Female florets about 5 to 9, about as long as the involucre at the time of flowering but the achene and pappus soon growing out so as to exceed it by 1 line or more. Sterile florets fewer and rather shorter. Achenes of the ray densely silky-villous. Pappus scales 12 to 20, narrow-lanceolate, acute, entire or slightly denticulate, about as long as the achene.

N. S. Wales. Darling river, *Victorian Expedition.*
S. Australia. Dry hills, Akaba and Cudnaka, *F. Mueller.*

48. ISOETOPSIS, Turcz.

Involucres of few broad scarious bracts, the outer ones with linear leaf-like tips. Receptacle small, without scales but with a few long hairs. Florets of the circumference in several rows, female, tubular, slender but broader towards the base, 2- or 3-toothed. Disk-florets hermaphrodite but sterile, the tube exceedingly slender, expanded into a campanulate 4-lobed limb. Anthers short, obtuse at the base. Style undivided. Achenes of the female florets nearly terete, with a pappus of obtuse chaffy scales. Achenes and pappus of the disk entirely abortive or rudimentary.—Dwarf tufted herb, the flower-heads small and densely tufted within the grass-like radical leaves.

The genus is limited to a single species, endemic in Australia. Notwithstanding the foliage, the affinity is evident with *Cotula* and *Myriogyne.*

1. **I. graminifolia,** *Turcz. in Bull. Mosc.* 1851, i. 175. *t.* 3. A dwarf, almost stemless densely-tufted plant, the numerous small flower-heads sessile and densely crowded within the radical leaves, which are linear, grass like, 1 to 2 or even 3 in. long, the inner ones dilated and more or less scarious at the base, passing into the outer involucral bracts, which have short green linear tips, the inner bracts broad and scarious, without tips, about 2 lines long. Florets about as long as the involucre. Achenes of the female florets rather thick, silky-hairy.

N. S. Wales. Between the Lachlan and Darling rivers, *Burkitt*, *Victorian Expedition.*
Victoria. Avoca river, *F. Mueller.*
S. Australia. Murray scrub, *F. Mueller.*
W. Australia, *Drummond*, 4*th Coll. n.* 207, 5*th Coll. n.* 382, 390, *and Suppl. n.* 70.

Tribe VIII. Gnaphalieæ.—Leaves alternate or very rarely irregularly opposite, quite entire. Flower-heads homogamous, with all the florets hermaphrodite, tubular, 4- 5- or rarely 3-toothed, or heterogamous, with filiform or very rarely ligulate or irregular female florets. Anthers with fine points or tails at their base. Style of *Senecionideæ.* Pappus of capillary simple or plumose bristles or rarely of short scales or none.—The majority of species have more or less of a loose cottony wool.

Subtribe I. Angiantheæ.—Flower-heads small, sessile or nearly so on a common receptacle in dense clusters or compound heads, often closely surrounded by imbricate bracts or by a few floral leaves forming a general involucre. Florets all tubular and hermaphrodite.

49. MYRIOCEPHALUS, Benth.

(Hyalolepis, *DC.*; Antheidosorus, *A. Gray*; Gilberta, *Turcz.*; Lamprochlæna, Elachopappus, *and* Polycalymma, *F. Muell.*)

Flower-heads exceedingly numerous and sessile on a broad very flat receptacle, in a dense cluster or compound head, surrounded by a general involucre of numerous narrow bracts in many rows, each usually with a scarious tip or radiating appendage. Partial heads 1- or few-flowered. Involucre of few bracts (the outer ones including one on the general receptacle subtending each head), usually contracted into a stalk-like base and scarious at the tip, the inner ones scarious and transparent from the base or rarely all narrow and rigid. Receptacle without scales. Florets hermaphrodite, tubular, slender, 3- to 5-toothed. Anthers with more or less conspicuous points or tails at the base. Style-branches nearly terete, truncate. Achenes more or less compressed. Pappus none or of 1 or more awns or bristle-like scales, simple or more or less plumose.—Herbs, either annual or with a perennial or woody base, often hoary or white, especially when young, with woolly or cottony hairs. Leaves alternate, entire. Clusters or compound heads terminal, usually globose or hemispherical; the flat receptacle sometimes so broadly dilated that the outer flower-heads are reflexed.

The genus is limited to Australia. It differs from *Angianthus* in the more perfect general involucre and more developed common receptacle, the partial involucres sometimes reduced to 2 bracts with a single floret, so as in some species to bring the compound head of *Myriocephalus* in close analogy to the simple head of *Helichrysum*.

Appendages of the general involucral bracts under 1 line long or inconspicuous.
  Dwarf plant. Leaves much longer than the flower-heads. Partial heads 1-flowered. Pappus of 1 very fine awn or none 1. *M. rhizocephalus.*
  Plants of ½ to 1 ft. Leaves under 1 in. long. Partial heads 4- to 6-flowered. Pappus none or of microscopic scales.
    Appendages of the general involucral bracts minute and yellowish or inconspicuous . . . . 2. *M. nudus.*
    Appendages of the general involucral bracts white and nearly 1 line long . . . . 3. *M. appendiculatus.*
  Decumbent or ascending plant, under 6 in. Leaves small, mostly cuneate or spathulate. Partial heads 4-flowered. Pappus of 1 to 4 bristle-like scales . . . . 4. *M. Rudallii.*
Appendages of the general involucral bracts 1 to 2 lines long, broad and very conspicuous.
  Appendages yellow. Partial-heads 1-flowered. Achenes glabrous. Pappus of 5 to 7 bristles, plumose from the base or at the end . . . . 5. *M. gracilis.*
  Appendages white.
    Herbaceous and flaccid. Partial heads 2- or 3-flowered. Achenes hairy. Pappus of 1 to 4 bristles . . . . . . 6. *M. helichrysoides.*
    Shrubby at the base with rigid erect branches. Partial heads 2-flowered. Achenes glabrous. Pappus of several bristles tipped with transparent globules . . . . 7. *M. suffruticosus.*
    Herbaceous and tall. Partial heads 5- to 8-flowered. Achenes woolly. Pappus of numerous ciliate bristles . . . . . 8. *M. Stuartii.*

1. **M. rhizocephalus,** *Benth.* A small tufted annual, the stem from ½ to 2 or 3 in. long, covered with the broad sheathing bases of the leaves.

Leaves above the broad base linear, grass-like, often 3 to 4 in. long. Clusters of flower-heads globose or hemispherical, ½ to ¾ in. diameter, sessile amidst the upper leaves which form an outer involucre. General involucre of very numerous bracts in several rows, transparent with short green midribs, ciliate with long woolly hairs, except the small glabrous tips which form a ray round the cluster. General receptacle very broad and flat. Partial heads very numerous, shorter than the general involucre, 1-flowered. Partial involucres of 3 bracts, one subtending and two lateral, all linear, hard and more or less concrete at the base, transparent but narrow above. Florets very numerous, 3- or 4-toothed. Achenes narrow, sparingly hairy especially near the top. Pappus of a single hair-like awn, slightly dilated at the base or occasionally none.—*Hyalolepis rhizocephala*, DC. Prod. vi. 149; *H. occidentalis*, F. Muell. Fragm. iii. 155.

N. S. Wales. Molle's Plains, *A. Cunningham*; between the Lachlan and Darling rivers, *Burkitt*.

Victoria. Wet grassy places near the Victoria range, *F. Mueller*; Skipton, *Whan*; Wimmera, *Dallachy*.

S. Australia. Murray river, *F. Mueller*; Cygnet Bay, Kangaroo Island, *Waterhouse*.

W. Australia, *Drummond*; Gordon river, *Oldfield*.

The hair-like bristle of the pappus occurs on the Western as well as on the Eastern specimens, but is often so fine as readily to escape observation.

2. **M. nudus,** *A. Gray in Hook. Kew Journ.* iii. 171. Erect, either annual or with a small perennial rhizome, nearly glabrous except towards the inflorescence, scarcely branched, ½ to 1 ft. high. Leaves linear, with a somewhat dilated base, the lower ones above ½ in. long, the upper ones smaller. Clusters of flower-heads when full-sized ½ in. diameter, without floral leaves. General involucre of several rows of numerous very small scarious woolly-ciliate bracts, shorter than the full-grown partial heads, with very small pale yellow tips forming a ray to the young cluster. Partial heads about 4-flowered, the involucres of 5 or 6 narrow scarious bracts, the subtending and outer ones with a rigid midrib and slightly woolly-ciliate, the inner ones quite glabrous with a scarcely conspicuous midrib. Achenes slightly pubescent. Pappus none.

W. Australia. Swan River, *Drummond, 1st Coll. and n.* 53; Murchison river, *Oldfield*.

Var. *Oldfieldii.* Weaker and more branched, sometimes loosely woolly, the radiating tips of the general involucre sometimes more conspicuous, sometimes less so than in the original form.—*Lamprochlaena Oldfieldii*, F. Muell. Fragm. iii. 157.—Murchison river and Champion Bay, *Oldfield*; *Drummond, 6th Coll. n.* 162.

3. **M. appendiculatus,** *Benth. in Hueg. Enum.* 61. Stems erect, sparingly branched, with a hard base and possibly perennial, ½ to 1 ft. high. Leaves linear, rarely above ½ in. long, with a slightly dilated base. Clusters of flower-heads depressed-globular, above ½ in. diameter when full grown. General involucre of many rows of very numerous scarious bracts woolly-ciliate at the base, with white ovate-oblong spreading tips forming a ray round the cluster. Partial heads 4- to 6-flowered, the involucres of about 6 cuneate-oblong scarious woolly-ciliate bracts, the subtending and outer ones with a rigid midrib, the inner ones transparent almost throughout. Florets

5-toothed. Achenes minutely hairy. Pappus none or of 1 or 2 microscopic scales.—DC. Prod. vi. 150; A. Gray in Hook. Kew Journ. iii. 174.

W. Australia. Swan River, *Huegel*, *Drummond*, *1st Coll. n.* 59.

4. **M. Rudallii,** *Benth.* An annual, branching at the base, with decumbent or ascending stems under 6 in. long, loosely woolly. Leaves oblong-linear, cuneate or spathulate, very obtuse, often dilated at the base, not above ⅓ in. long. Clusters of flower-heads when full-grown about ½ in. diameter. General involucre of very numerous woolly-ciliate bracts, those of the outer rows shorter, with green midribs and no laminæ, those of the inner rows with small white petal-like spreading tips, forming a ray to the cluster. Partial heads about 4-flowered, the involucre of about 5 very narrow bracts, the subtending and outer ones little more than the midrib dilated and exceedingly thin and transparent at the end, all ciliate with fine long woolly hairs. Achenes with 1 to 4 unequal bristle-like scales.—*Elachopappus Rudallii*, F. Muell. Fragm. iii. 157.

S. Australia. Cooper's Creek, *Howitt's Expedition.*

5. **M. gracilis,** *Benth.* An annual, with erect slender branches not exceeding 6 in. Leaves narrow-linear. Clusters of flower-heads numerous, hemispherical, about ¼ in. diameter. General involucre of numerous dry appressed bracts, those of several outer rows with a broad bright-yellow scarious spreading lamina of nearly 1 line, forming a shining ray to the cluster, the inner bracts ovate, more scarious, without spreading tips and passing into the subtending bracts within the cluster. Partial heads 1-flowered, the involucres of 3 to 5 narrow scarious bracts usually shorter than the subtending one, especially in the centre of the cluster where all are smaller. Florets 4- or 5-toothed. Achenes glabrous. Pappus of 5 or 6 slender bristles of which 1 or 2 are very fine and hair-like with a short clavate plume at the end, the others not quite so long, more rigid, plumose-ciliate from the base.—*Antheidosorus gracilis*, A. Gray in Hook. Kew Journ. iii. 173; *Gilberta tenuifolia*, Turcz. in Bull. Mosc. 1851, i. 193.

W. Australia. Swan River, *Drummond;* Murchison river, *Oldfield.*

6. **M. helichrysoides,** *A. Gray in Hook. Kew Journ.* iii. 175. Glabrous or nearly so. Stems usually weak and decumbent or ascending, somewhat branched, ½ to 1 ft. long. Leaves linear, obtuse, often above 1 in. long. Clusters of flower-heads when full-sized about ½ in. diameter. General involucre of very numerous bracts in several rows, each one dark in the centre with white margins and white spreading petal-like laminas, sometimes above 1 line long, forming a conspicuous ray to the cluster. Partial heads 2- or 3-flowered, the involucral bracts few, oblong, not ciliate, the subtending and outer ones with a prominent rigid midrib, less conspicuous in the inner ones. Achenes hairy, especialy at the top. Pappus of 1, 2 or very rarely 3 bristles, very fine at the time of flowering, thickened and hardened at the base on the ripe achene.

W. Australia. Swan River, *Drummond*, *1st Coll.;* very wet places, Cape Naturaliste, *Oldfield.*

7. **M. suffruticosus,** *Benth.* Shrubby at the base, the branches white

with a close cotton, the flowering ones simple, erect, above 1 ft. long. Leaves linear or linear-lanceolate, half stem-clasping, somewhat coriaceous with revolute margins, the larger ones above 1 in. long, the upper ones small and distinct. Clusters of flower-heads hemispherical, ½ to ¾ in. diameter. General involucre of very numerous bracts in many rows, a few small narrow herbaceous and woolly, all the others with white obovate spreading laminæ 1 to 1½ lines long, forming a very conspicuous ray to the clusters. Partial heads mostly 2-flowered, the involucral bracts about 5 or 6 besides the subtending one, usually very narrow without scarious margins. Achenes glabrous or nearly so, but as well as the whole partial flower-heads, apparently glutinous. Pappus of several exceedingly fine bristles, nearly as long as the corolla, simple but bearing usually at their tips 1 to 4 little globular transparent bodies (glands ?).

W. Australia. Between Moore and Murchison rivers, *Drummond*, *6th Coll. n.* 153.

8. **M. Stuartii,** *Benth.* Erect, apparently annual, not much branched, 1 to 2 ft. high, pubescent or woolly-white. Leaves linear or lanceolate, half stem-clasping, 1 to 2 in. long, the smaller distant upper ones often with white scarious tips passing into the involucral bracts. Clusters of flower-heads hemispherical, attaining 1 in. diameter or even more. General involucre of numerous bracts in several rows, herbaceous at the base, with white ovate spreading laminæ fully 2 lines long, forming a very conspicuous ray to the cluster. Partial heads 5- to 8-flowered or the central one with more numerous florets; the involucral bracts exceedingly thin and transparent, fringed at the end, about 2 of the outermost of each involucre as well as the subtending one contracted into a short rigid midrib, the others transparent from the base and very broad. Achenes densely clothed with very long woolly hairs. Pappus of 15 to 20 unequal bristles, slightly dilated and ciliate or plumose with short hairs.—*Polycalymma Stuartii*, F. Muell. and Sond. in Linnæa, xxv. 494; F. Muell. Pl. Vict. t. 42.

N. S. Wales. Lachlan and Darling rivers to the Barrier range and Cooper's Creek, *Victorian and other Expeditions*; on the Murray and Murrumbidgee, *F. Mueller*.
Victoria. Murray river, *F. Mueller*.
S. Australia. Murray river, *F. Mueller*; between Lake Gairdner and Devonport Range, *Babbage's Expedition*.

50. ANGIANTHUS, Wendl.

(Siloxerus, *Labill.*; Ogcerostylus, *Cass.*; Styloncerus, *Spreng.*; Cylindrosorus and Phyllocalymma, *Benth.*; Skirrophorus, *DC.*; Chrysocoryne, *Endl.*; Eriocladium, *Lindl.*; Pogonolepis, *Steetz*; Piptostemma, Epitriche *and* Gamozygis, *Turcz.*; Cephalosorus, Hyalochlamys *and* Dithyrostegia, *A. Gray*; Pleuropappus, *F. Muell.*)

Flower-heads numerous and sessile on a cylindrical conical convex or flat receptacle, in a dense cluster spike or compound head, surrounded by a general involucre of large and leaf-like or of small and herbaceous or scarious bracts, or of both in few rows without radiating tips or sometimes very few or none. Partial heads 1- or few-flowered, very rarely many-flowered. Involucre compressed, of few scarious transparent bracts, the subtending one flat, two lateral ones conduplicate and keeled or concave, and sometimes 2 or

more inner ones flat or slightly concave. Receptacle without scales. Florets hermaphrodite, tubular, slender, 4- or 5-toothed, often hardened at the base. Anthers more or less distinctly pointed or tailed at the base. Style-branches nearly terete, truncate. Achenes usually compressed. Pappus none or of 1, 2 or more jagged or awned scales, often united in a ring or cup at the base. Annual or rarely perennial herbs, or in one species shrubby, glabrous or more or less cottony or woolly-white. Leaves alternate or very rarely irregularly opposite, entire. Clusters or spikes of flower-heads terminal, sessile or pedunculate, cylindrical, oblong-ovoid, globular or hemispherical, the partial involucres usually very deciduous with the achenes, or rarely the subtending bract persistent.

The genus is limited to Australia. The numerous genera, mostly monotypic or nearly so, which it is here proposed to unite, have been established chiefly upon minute distinctions in the pappus, which appear to me to afford a much better specific than generic character. In the genus the general involucre is less perfect and the general receptacle less developed than in *Myriocephalus*, more so than in *Gnephosis* and *Calocephalus*, and the partial involucre more reduced and flattened than in either of the two latter genera. For the common name, *Siloxerus* of Labillardière has undoubtedly the right of priority, but it has by common consent been rejected as being at complete variance with the etymology given by the author. Cassini's emendation (rejected as barbarous) and Sprengel's generally adopted one are both more recent than Wendland's name, which typically represents the tribe, and has been applied to several of the species, whilst Labillardière's has only been given to a single one. The general rules of the science appear therefore to be best observed by applying the name of *Angianthus* to the whole genus.

Clusters or spikes of flower-heads cylindrical, oblong-ovoid or rarely globose, the receptacle a cylindrical rhachis. Annuals or rarely herbaceous perennials.

Pappus conspicuous.

Spikes cylindrical without floral leaves. Pappus of 2 or 3 scales ending in bristles plumose at the end . . . . . 1. *A. tomentosus.*

Spikes cylindrical, surrounded by floral leaves. Pappus of 1 very oblique fringed boat-shaped scale . . . . 2. *A. pleuropappus.*

Spikes oblong, often surrounded by floral leaves. Pappus a short irregularly-fringed cup . . . . 3. *A. brachypappus.*

Spikes ovoid, surrounded by floral leaves. Involucral bracts with white appendages. Pappus of several lanceolate fringed scales Stems very short . . . . 4. *A. humifusus.*

Pappus none or a minute ring.

Bracts of the general involucre all scarious.

Spikes slender, cylindrical, ½ to 1 in. long, attenuate at the base, of a shining brown . . . . 5. *A. myosuroides.*

Spikes short, cylindrical, obtuse at both ends, brown . . 6. *A. tenellus.*

Spikes oblong, attenuate at the base . . . . 7. *A. pusillus.*

Outer bracts of the general involucre leafy or tomentose, although short. Spikes ovoid-oblong . . . . 8. *A. Milnei.*

Clusters of flower-heads ovoid, the receptacle conical. Plant shrubby at the base.

Pappus none or a minute ring. General involucre shorter than the heads . . . . 9. *A. Cunninghamii.*

Clusters of flower-heads ovoid globular or hemispherical, the receptacle flat, convex or rarely conical (almost oblong in A. globifer*). Annuals or rarely herbaceous perennials.*

Pappus conspicuous.

Tall plant. Clusters of flower-heads surrounded by broadly ovate floral leaves. Pappus cup-shaped, deeply jagged . . 10. *A. phyllocephalus.*
Small plant. Clusters of flower-heads surrounded by long linear bracts. Pappus of 5 ovate awned scales . . . . 11. *A. micropoides.*
Small plant. Clusters of flower-heads surrounded by 3 or 4 floral leaves not exceeding the heads. Pappus of 3 ovate awned scales . . . . 12. *A. microcephalus.*
Pappus none or a minute ring.
Involucral bracts usually 4 enclosing 2 or rarely 1 floret.
Stems 2 to 3 in. long or more. Florets 5-merous.
Floral leaves broadly ovate . . . . 13. *A. platycephalus.*
Floral leaves ovate-lanceolate . . . . 14. *A. Drummondii.*
Stems 2 to 3 in. long. Florets 4-merous.
Clusters of flower-heads hemispherical. Florets thickened at the base . . . . 15. *A. Preissianus.*
Clusters of flower-heads ovoid or globular. Florets not thickened at the base . . . . 16. *A. eriocephalus.*
Stems scarcely any. Clusters of flower-heads depressed-globular, almost radical. Florets 5-merous.
Heads 2-flowered . . , ... 17. *A. pygmæus.*
Heads 1-flowered . . . . 18. *A. globifer.*
Involucral bracts 2, enclosing 1 floret.
Dwarf plant, the clusters of flower-heads almost radical . . 19. *A. demissus.*
Erect or ascending, 1 to 6 in. high with terminal clusters.
Leaves narrow.
Stems rigid, 2 to 6 in. high. Floral leaves longer than the heads . . . . 20. *A. strictus.*
Stems slender, 1 to 3 in. high. Floral leaves not longer than the heads . . . . 21. *A. plumiger.*
Leaves ovate, stem-clasping. Stem slender, 1 to 3 in. high. Floral leaves 2, broad, often connate . . . 22. *A. amplexicaulis.*

1. **A. tomentosus,** *Wendl. Coll. Pl.* ii. 31. *t.* 48. An annual, more or less clothed with white wool, the stems numerous, erect or decumbent, rarely exceeding 6 in. in the Eastern specimens, often above 1 ft. in the Western ones. Leaves from oblong-cuneate to linear, obtuse, narrowed at the base and slightly decurrent, the upper ones small. Clusters of flower-heads oblong or cylindrical, yellowish or pale straw-coloured, those terminating the stem sometimes $\frac{3}{4}$ or even 1 inch long, those on the branches smaller and more ovoid, all obtuse at the base and usually not close to the last leaves, the rhachis filiform, with few outer empty bracts. Partial involucres about $1\frac{1}{2}$ lines long, the bracts transparent with an opaque midrib in the lower part, 2 conduplicate and 2 or 3 flat. Florets 2, or sometimes 1 or 3, 5-toothed, the corolla not at all or scarcely thickened at the base. Pappus of 2 or 3 ovate denticulate scales, each terminating in a rather long bristle slightly plumose at the end.—DC. Prod. vi. 150; Sond. in Linnæa, xxv. 487; *Cylindrosorus flavescens*, Benth. in Hueg. Enum. 627; DC. Prod. vi. 152; *Angianthus flavescens*, Steetz in Pl. Preiss. i. 438.

Victoria. Murray river, *F. Mueller, Dallachy.*

S. Australia. Nuyt's Archipelago, *R. Brown;* scrub on the Murray river and thence to St. Vincent's Gulf, *Behr, F. Mueller* and others.

W. Australia. King George's Sound to Swan River, *Drummond, 4th Coll. n.* 217, *5th Coll. n.* 352, 353; *Preiss, n.* 62, and others; Fitzgerald and Phillips ranges, *Maxwell.* Bowes and Murchison rivers, *Oldfield.*

2. **A. pleuropappus,** *Benth.* An erect slender branching annual, woolly-tomentose or at length glabrous. Leaves linear. Clusters of flower-heads cylindrical, $\frac{1}{2}$ in. long or more, of a golden-yellow and shining, sessile among a few floral leaves like the stem ones or more lanceolate and shorter than the spike. A few short broad scarious bracts within the floral leaves forming a general involucre and passing into the subtending bracts. Receptacle cylindrical, slender. Partial involucres of 2 keeled bracts and 2 flat stipitate ones expanded into an orbicular erect lamina. Florets 5-merous, thickened and bulb-like at the base. Pappus annular at the base, very oblique, the inner side very short and jagged, the outer side boat-shaped, fringed and terminating in a point nearly as long as the floret.—*Pleuropappus phyllocalymmeus*, F. Muell. in Trans. Vict. Inst. 1855, 37.

S. Australia. Sterile plains, Port Lincoln, *Wilhelmi.*

3. **A. brachypappus,** *F. Muell. in Trans. Phil. Soc. Vict.* i. 44, *and in Hook. Kew Journ.* viii. 149. An annual clothed with white wool, resembling *A. tomentosus*, but the stems more diffuse. Leaves linear or linear-cuneate, the uppermost short ones close under the inflorescence. Clusters of flower-heads oblong or cylindrical, attaining $\frac{1}{2}$ to $\frac{3}{4}$ in., not so obtuse at the base as in *A. tomentosus*, closely sessile above the last leaves. Receptacle cylindrical. Partial involucres as in *A. tomentosus*, $1\frac{1}{2}$ lines long, with 2 keeled and 2 or 3 flat bracts. Florets usually 2. Pappus a short irregularly-fringed or ciliate cup, not divided into distinct scales, and without any long bristles.

N. S. Wales. Darling and Lachlan rivers, *Burkitt*, *Victorian Expedition*; Murray river, *Dallachy.*

S. Australia. N.W. interior, *M'Douall Stuart's Expedition.*

4. **A. humifusus,** *Benth.* A dwarf diffuse annual, the slender stems often shorter than the inflorescence, rarely 3 or 4 in. long. Leaves very narrow-linear. Clusters of flower-heads ovoid or globose, of a brown-reddish or nearly white colour, $\frac{1}{2}$ to $\frac{3}{4}$ in. long, surrounded by floral leaves resembling the stem ones, the inner ones bordered at the base by scarious margins. Receptacle cylindrical, slender, the subtending bracts oblong, ciliate. Partial involucres of 4 to 6 bracts, broader than the subtending one, the tips expanded into short broad plicate white appendages. Florets 2 or 3, 5-merous. Pappus of 5 or 6 lanceolate shortly aristate jagged scales shorter than the floret. *Siloxerus humifusus*, Labill. Pl Nov. Holl. ii. 58. t. 209; *Stylocerus humifusus*, Spreng. Syst. iii. 451; DC. Prod. vi. 149; Steetz in Pl. Preiss. i. 435; *S. cylindraceus*, Steetz, l. c. i. 436.

W. Australia. King George's Sound, *R. Brown*, *Preiss*, *n.* 41, and others, thence to Swan River, *Drummond*, 1st *Coll.*, 5th *Coll. n.* 361, *Preiss*, *n.* 40, and others; Gordon river, *Preiss*, *n.* 1361, *Oldfield*, and Murchison river, *Oldfield*, and eastward to Esperance Bay, *Maxwell.*

Var. *minor.* Clusters of flower-heads and the flowers themselves much smaller, the pappus nearly as long as the floret.—Kalgan river, *Oldfield.*

Var. *grandiflorus.* More robust, 2 to 4 in. high. Clusters of flower-heads and flowers larger. Involucral bracts with whiter tips.—*Stylocerus suberectus*, Steetz in Pl. Preiss. i. 436; *Preiss*, *n.* 42.

5. **A. myosuroides,** *Benth.* Very closely allied to and perhaps a variety of *A. tenellus*, with the same stature and foliage, but the spike or

cluster of flower-heads is long and slender, sometimes exceeding 1 in., more tapering at the base, the involucral bracts not so broad and less ciliate, and the florets mostly 5-merous and solitary with a very slight thickening at the base.—*Chrysocoryne myosuroides*, A. Gray in Hook. Kew Journ. iii. 152; *C. uniflora*, Turcz. in Bull. Mosc. 1851, i. 188.

W. Australia, *Drummond, 3rd Coll. n.* 116.

6. **A. tenellus,** *Benth.* A slender annual of 1 to 2 in., tomentose or at length glabrous. Leaves small, oblong-linear, thick, obtuse. Spikes or clusters of flower-heads cylindrical, obtuse and scarcely tapering at the base, the longest about ½ in. long but mostly shorter, brown and shining. Receptacle cylindrical, slender. Subtending bracts very broad and transparent with a rather more opaque oblong part at the base, very few of the lower ones empty and no floral leaves round the spike. Partial involucres of 2 complicated rather broad transparent bracts ciliate on the margin. Florets 2, 3-merous, not thickened at the base. Pappus none.—*Crossolepis pusilla*, Hook. Ic. Pl t. 413, not of Benth.; *Chrysocoryne Drummondii*, A. Gray in Hook. Kew Journ. iii. 152; *C. tenella*, F. Muell. in Trans. Vict. Inst. 1855, 130, and in Hook. Kew Journ. viii. 149.

S. Australia. Between the Fountain and Long Lake, Spencer's Gulf, *Wilhelmi.*
W. Australia. King George's Sound, *R. Brown*; Swan River, *Drummond*, 1*st Coll.*
A. Gray's specific name has the priority over F. Mueller's, but has been applied to another species by Turczaninow.

7. **A. pusillus,** *Benth.* A slender erect corymbosely branched annual of 2 to 6 in., slightly woolly when young but soon becoming glabrous. Leaves thick, linear or linear-cuneate, or the upper ones small and ovate. Clusters of flower-heads oblong-clavate, 3 to 4 lines long, from a pale yellow to a rich brown, shining. Receptacle cylindrical, slender. Subtending bracts very broad and transparent, with an opaque truncate base, very few of the lower ones smaller and empty, and no floral leaves round them. Partial involucres of 2 keeled bracts and 2 or 4 flat ones. Florets 2 or 3 in the upper heads or sometimes only 1 in the lower ones, 5-merous, scarcely thickened at the base. Pappus annular and fringed but usually very minute, adhering to the corolla and falling off with it.—*Crossolepis pusilla*, Benth. in Hueg. Enum. 61; *Chrysocoryne pusilla*, Endl. in Bot. Zeit. 1843, 458; Steetz in Pl. Preiss. i. 441; *C. Huegelii*, A. Gray in Hook. Kew Journ. iii. 151; *C. angianthoides*, F. Muell. in Linnæa, xxv. 404, 488.

N. S. Wales. Murray and Darling desert, *Victorian Expedition.*
S. Australia. Murray river and near Cudnaka, *F. Mueller.*
W. Australia. Swan River, *Huegel*, *Drummond*, *n.* 355, *Preiss*, *n.* 45; Murchison river, *Oldfield.*

Var. *polyanthus.* Spikes or clusters of flower-heads, when full grown ½ in. long, the upper partial involucres often containing 3 to 6 florets.—Murray and Darling desert.

8. **A. Milnei,** *Benth.* Annual or possibly perennial, covered with white wool, corymbosely branched, about 6 in. high. Leaves linear. Clusters of flower-heads ovoid, under ½ in. long, surrounded by a few herbaceous or tomentose floral leaves or bracts, not exceeding the partial heads. Receptacle cylindrical. Involucral bracts transparent, with a short opaque midrib, 2

keeled and 2 flat besides the subtending one. Florets 2, 5-toothed, much thickened, bulb-like and truncate at the base. Pappus none.

W. Australia. Sharks' Bay and Dirk Hartog's Island, abundant, *Milne.*

9. **A. Cunninghamii,** *Benth.* A low much-branched bushy shrub or undershrub usually very white, with a close wool and very different in habit from the rest of the genus. Leaves spreading or recurved, from oblong-cuneate and under ¼ in. long to linear and above ½ in., all obtuse. Clusters of flower-heads ovoid-globose, rather small, in terminal corymbs, the upper leaves passing into oblong imbricate floral leaves, forming a general involucre but not exceeding the flower-heads. Receptacle conical. Partial involucres of 2 keeled and 2 flat bracts. Florets usually 2, 5-merous, thickened and bulb-like at the base. Pappus a minute ring falling off with the corolla.—*Skirrophorus Cunninghamii*, DC. Prod. vi. 150, and in Deless. Ic. Sel. iv. t. 51; Steetz in Pl. Preiss. i. 438; *Eriocladium pyramidatum*, Lindl. Swan Riv. App. 24.

W. Australia. Swan River, very abundant, *Fraser, Drummond, 3rd Coll. n.* 125, *Preiss, n.* 30; Murchison river, *Oldfield, Drummond, 6th Coll. n.* 150 or 159; Sharks' Bay and Dirk Hartog's Island, very common, *A. Cunningham, Milne.*

10. **A. phyllocephalus,** *Benth.* Erect, not much branched, stout and rigid, 1 to 2 ft. high, with a loose deciduous wool. Leaves few, oblong, spathulate, the lower ones petiolate and often above 1 in. long, the upper smaller and sessile. Clusters of flower-heads at first hemispherical at length globose, attaining ¾ in. diameter, surrounded by broadly ovate floral leaves, closely imbricate at the base, spreading but herbaceous at the tips. Receptacle convex. Partial involucres exceedingly deciduous, flattened, of about 3 inner complicated bracts often woolly towards the top and 1 or perhaps 2 or 3 outer narrower flat ones. Florets solitary. Pappus cup-shaped, deeply jagged and often oblique, usually coming off with the corolla.—*Cephalosorus phyllocephalus*, A. Gray in Hook. Kew Journ. iii. 152; *Piptostemma carpesioides*, Turcz. in Bull. Mosc. 1851, i. 192; *Cephalosorus brevipapposus*, F. Muell. Fragm. iii. 159.

W. Australia, *Drummond, 4th Coll. n.* 200; Murchison river, *Oldfield.*

11. **A. micropoides,** *Benth.* An erect or decumbent white-woolly annual of a few inches or when very luxuriant above ½ foot. Leaves linear. Clusters of flower-heads nearly globular, closely surrounded by linear leaves often lanceolate at the base and much longer than the cluster, with a few scarious empty bracts within them. Receptacle conical. Partial involucres of 2 concave and about 4 flat narrow-spathulate transparent bracts. Florets 2, 5-merous, slightly thickened at the base. Pappus of about 5 ovate jagged scales terminating in a simple awn not quite so long as the floret.—*Phyllocalymma micropoides*, Benth. in Hueg. Enum. 62; Steetz in Pl. Preiss. i. 436; *P. filaginoides*, Steetz, l. c. 437.

W. Australia. Swan River, *Huegel, Preiss, n.* 36 *and* 37.

The habit is that of *A. strictus*, it is also very near *A. Drummondii*, but is readily distinguished by the pappus. In Preiss's specimens, n. 36 the pappus scales without the awn are nearly half as long as the corolla and scarcely jagged, in n. 37 they are much shorter and more fringed and the awn is shorter. Huegel's specimens are intermediate.

12. **A. microcephalus,** *Benth.* A small diffuse much-branched annual, nearly glabrous. Leaves linear or linear-cuneate, scarcely exceeding ¼ in. Clusters of flower-heads numerous, depressed-globular, attaining nearly 3 lines diameter, surrounded by 3 or 4 floral leaves scarcely so long as the clusters. Receptacle very convex. Partial involucres of 2 keeled bracts and rarely a third flat one besides the subtending one. Florets solitary, 5-merous. Pappus of 3 ovate scales quite distinct or more or less united in a cup, each one slightly jagged and with a fine awn shorter than the floret.—*Cephalosorus microcephalus*, F. Muell. Fragm. iii. 158.

W. Australia. Salt swamp at the estuary of the Murchison river, *Oldfield.*

13. **A. platycephalus,** *Benth.* A small slender annual, none of our specimens 3 in. long. Leaves linear or linear-cuneate. Clusters of flower-heads depressed, hemispherical, 4 to 5 lines diameter when fully out, surrounded by ovate-acuminate floral leaves longer than the cluster, and a few inner scarious broadly-obovate bracts. Receptacle slightly convex. Partial involucres of 2 keeled and 2 flat bracts besides the subtending one. Florets 2, 5-merous, not thickened at the base. Pappus a short jagged ring readily falling off with the corolla.

W. Australia. Tone river, *Oldfield.*

14. **A. Drummondii,** *Benth.* A little slender annual of 2 or 3 in. Leaves linear. Clusters of flower-heads hemispherical, about 3 lines diameter, surrounded by ovate-lanceolate floral leaves longer than the cluster, and a few inner scarious bracts as long as the involucres. Receptacle convex. Partial involucres of 2 keeled and 2 flat bracts rather broad. Florets usually 2, 5-merous, not thickened at the base. Pappus none.—*Skirrophorus Drummondii*, Turcz. in Bull. Mosc. 1851, i. 188.

W. Australia, *Drummond, 3rd Coll. n.* 123. No. 178 may be a variety of the same with longer and narrower floral leaves, but the specimens are too young for accurate determination.

15. **A. Preissianus,** *Benth.* An erect annual of 2 to 4 in., sometimes slender and nearly simple, sometimes much branched from the base, more or less woolly-white. Leaves linear, mostly alternate. Clusters of flower-heads depressed-globular, or hemispherical when fully out, 4 lines diameter or more, surrounded by ovate-lanceolate or linear-lanceolate closely appressed floral leaves longer than the cluster. Receptacle broad, convex. Partial involucres of 2 keeled or concave and 2 flat bracts, a little more than 1 line long. Florets usually 2, 4-merous, thickened and bulb-like at the base. Pappus a minute denticulate ring.—*Skirrophorus Preissianus*, Steetz in Pl. Preiss. i. 439.

Victoria. Plain near Stratham, *Whan;* near Melbourne, *Adamson.*
Tasmania. Islands of Kent's group, Bass's Straits, *R. Brown.*
S. Australia. Holdfast Bay, Spencer's Gulf, *F. Mueller.*
W. Australia, *Drummond, n.* 122; Woodman's Point, *Preiss, n.* 38; Moir's Inlet, *Maxwell.*

There may be some doubt whether the characters separating this and *A. eriocephalus* are constant. In Drummond's specimens, all very much a like, I find sometimes the slender 4-merous corollas bulb-like at the base of this species, sometimes 5-merous corollas not thickened at the base and apparently sterile. No. 206 of Drummond may be the same in a very young state. The species requires however further investigation.

16. **A. eriocephalus,** *Benth.* A little slender annual of 1 to 2 in. Leaves narrow-linear, often opposite. Clusters of flower-heads ovoid or at length globose, but rarely exceeding 2 lines diameter and surrounded by floral leaves not much longer than the cluster. Receptacle smaller and more convex than in *A. Preissianus.* Partial involucres the same as in that species. Florets usually 2, slender, 4-merous, but not at all thickened at the base. Pappus a minute ring or quite inconspicuous.—*Skirrophorus eriocephalus*, Hook. f. Fl. Tasm. i. 198. t. 53 A.

Victoria. Victoria range, Yarra river, sandy and salt plain near Brighton, Hobson's Bay, *F. Mueller.*

Tasmania. Seacoast near George Town, *Gunn.*

W. Australia. King George's Sound, *R. Brown.*

In most specimens the opposite leaves, narrow clusters of flower-heads and florets not thickened at the base appear to separate this from *A. Preissianus*, but sometimes one or all these characters are inconstant, and this may be a variety only of that species.

17. **A. pygmæus,** *Benth.* A little diffuse annual, forming tufts of about 1 in. diameter, white, with a close tomentum. Leaves linear. Clusters of flower-heads depressed-globular, 3 to 4 lines diameter when full-grown, surrounded by a few ovate or lanceolate floral leaves, scarcely exceeding the cluster, and a few inner broad scarious bracts. Receptacle convex. Partial involucres of 2 folded and 2 flat bracts, besides the subtending one. Florets 2, 5-merous, not thickened at the base at the time of flowering. Pappus none.—*Skirrophorus pygmæus*, A. Gray in Hook. Kew Journ. iii. 118; *S. mucronulatus*, Turcz. in Bull. Mosc. 1851, ii. 72.

W. Australia, *Drummond, 5th Coll. n.* 59.

18. **A. globifer,** *Benth.* A dwarf plant, apparently annual, the stems not ½ in. long or scarcely any, forming little clustered tufts ½ to 1 in. diameter. Leaves linear, few and short. Clusters of flower-heads globular, 3 to 4 lines diameter, more or less woolly, surrounded by a few bracts either all broad and scarious or the outer ones narrower and more woolly with short leafy tips, the subtending bracts in the clusters with an opaque midrib, scarious margins, and often produced into a small petal-like pale pink lamina. Receptacle oblong. Involucres of 2 keeled and 2 inner flat bracts. Florets solitary slender, 5-merous, becoming somewhat enlarged and hardened at the base so as to cover the top of the achene. Pappus none.—*Hyalochlamys globifera*, A. Gray in Hook. Kew Journ. iii. 101.

W. Australia, *Drummond, 4th Coll. n.* 204. The subtending bracts within the clusters of flower-heads are more persistent than in most species of the genus, but the involucres are much more those of *Angianthus* than of *Gnephosis.*

19. **A. demissus,** *Benth.* A little diffuse annual, forming loose tufts of 1 to 2 in. diameter. Leaves linear. Clusters of flower-heads obovoid-globose, densely enveloped in long wool, surrounded by a few reflexed floral leaves, longer than the involucres and scarcely any scarious bracts. Receptacle small. Partial involucres of 2 conduplicate bracts besides the subtending flat one, narrow and woolly in the upper half. Florets solitary, 5-merous, dilated and bulb-like at the base; bulb fringed with a ring of long wool, more adherent to the achene than to the rest of the corolla, but readily detached

from both and carrying off the top of the achene. Pappus none.—*Skirrophorus demissus*, A. Gray in Hook. Kew Journ. iii. 149; *Epitricke cuspidata*, Turcz. in Bull. Mosc. 1851, ii. 75.

W. Australia, *Drummond*, 5*th Coll. Suppl. n.* 58.

20. **A. strictus,** *Benth.* Probably annual, with ascending or erect rigid stems of 2 to 6 in. Leaves very narrow. Clusters of flower-heads obovoid-turbinate, surrounded by rather numerous narrow and rigid recurved floral leaves, longer than the involucres, often acute and almost pungent, with a few inner oblong scarious bracts passing into the subtending ones within the cluster. Receptacle convex. Partial involucre of 2 narrow-oblong concave bracts. Florets solitary, 5-merous, not thickened at the time of flowering, more decidedly bulb-like as the fruit ripens. Pappus none.—*Pogonolepis stricta*, Steetz in Pl. Preiss. i. 440; *Skirrophorus strictus*, A. Gray in Hook. Kew Journ. iii. 149; *S. Muellerianus*, Sond. in Linnaea, xxv. 486.

N. S. Wales. Between the Murray and Darling rivers, *Victorian Expedition.*
Victoria. Plains on Avora river, *F. Mueller*; Wimmera, *Dallachy.*
S. Australia. Crystal Brook and St. Vincent's Gulf, *F. Mueller.*
W. Australia, *Drummond*, 5*th Coll. n.* 357; Vasse river, *Preiss, n.* 39, *Oldfield*; Murchison river and Champion Bay, *Oldfield.*

21. **A. plumiger,** *Benth.* A slender annual of 1 to 3 in. Leaves narrow-linear. Clusters of flower-heads obovoid, about 1½ lines diameter, surrounded by herbaceous floral leaves, shorter than or scarcely exceeding the involucres, with rather numerous inner scarious fringed or jagged bracts, as long as the involucres. Partial involucres of 2 conduplicate bracts, besides the flat subtending one which is much shorter than the involucres, but usually with the midrib produced into a jagged almost plumose appendage almost as long as the florets. Florets solitary, 5-merous, not thickened at the base. Pappus none.

W. Australia. Swan and Murchison rivers, *Oldfield.*

22. **A. amplexicaulis,** *Benth.* A slender, erect, glabrous annual of 1 to 3 in., simple or slightly branched. Leaves ovate, concave, stem-clasping, the upper ones often shortly sheathing at the base, obtuse, under ¼ in. long, the 2 uppermost floral ones larger, broader, closely embracing each other, or shortly connate, forming an involucre round the cluster of flower-heads. Receptacle small, slightly branched. Subtending and involucral bracts generally reduced to tufts of a very long white wool, filling the general involucre, but usually shortly united into exceedingly thin, transparent, membranes at the base, 2 such bracts to each floret, rather more prominent, but excessively thin and often united into a single membrane enclosing the achene, which is densely silky-hairy. Pappus of very short scales or bristles dilated and united at the base.—*Dithyrostegia amplexicaulis*, A. Gray in Hook. Kew Journ. iii. 100; *Gamozygis flexuosa*, Turcz. in Bull. Mosc. 1851, ii. 76. t. 1.

W. Australia, *Drummond, Suppl. to* 5*th Coll. n.* 57.

51. GNEPHOSIS, Cass.

(Cephalosorus (*partly*); Nematopus *and* Crossolepis, *A. Gray*; Leptotriche, *Turcz.*; Trichanthodium *and* Cyathopappus, *F. Muell.*)

Flower-heads numerous and usually more or less stipitate, on a convex or rarely cylindrical receptacle, in an ovoid or globular dense cluster or compound head, without any general involucre or surrounded by a few leafy or scarious bracts rarely exceeding the florets. Partial heads 1- or few-flowered, very rarely many-flowered. Involucre of several bracts, the outer ones like the subtending ones, narrow and often more persistent, the inner ones broader. transparent and very deciduous. Receptacle without scales. Florets hermaphrodite, tubular, slender, 4- or 5-toothed, sometimes hardened at the base. Anthers more or less distinctly pointed or tailed at the base. Style-branches nearly terete, truncate. Achenes usually compressed. Pappus none or forming a jagged ring or cup, or rarely of several short distinct scales.—Annual or rarely perennial herbs, glabrous or more or less cottony. Leaves alternate, entire. Cluster of flower-heads terminal, sessile or pedunculate.

The genus is limited to Australia. It is closely allied to *Angianthus*, but the general involucre and receptacle are less developed than in that genus and the partial involucres much more so, consisting of much more numerous bracts and not flattened.

Partial heads 1- or 2-flowered.
Minute almost stemless plant. Pappus of several short plumose scales . . . . 1. *G. Burkittii.*
Stems ascending. Heads 1- or 2-flowered. Involucral bracts appendiculate. Pappus none. Achenes woolly (glabrous or or nearly so in the rest of the genus) . . . . 2. *G. eriocarpa.*
Stems erect, virgate. Heads 1-flowered. Pappus cup-shaped.
Clusters of flower-heads ovoid. Involucral bracts as long as the florets. Pappus-cup open . . . . 3. *G. macrocephala.*
Clusters of flower-heads globular. Florets protruding beyond the involucres. Pappus-cup tubular . . . . . . 4. *G. skirrophora.*
Stems erect, corymbose. Heads 2-flowered. Clusters turbinate-globular.
Involucral bracts appendiculate. Pappus cup-shaped.
Stem hard. Leaves under ½ in. long . . . . 5. *G. cyathopappa.*
Stems very slender. Leaves almost subulate, above ½ in. long. 6. *G. leptoclada.*
Involucral bracts not appendiculate. Pappus none . . . . 7. *G. arachnoidea.*
Partial heads 3- to 6-flowered. Erect plants with filiform branches. Clusters of flower-heads very shining. Pappus annular, jagged or none.
Branches divaricate, dichotomous. Clusters of flower-heads globular . . . . 8. *G. tenuissima.*
Branches flexuose. Clusters of flower-heads turbinate at the base 9. *G. acicularis.*
Partial heads 3- to 20-flowered. Dwarf or shortly diffuse annuals with very woolly clusters of flower-heads. Pappus none.
Leaves linear-subulate. Heads 3- to 5-flowered. Plant under 1 in. . . . . 10. *G. pygmæa.*
Leaves linear-oblong or oblong. Plant of 1 to 3 in.
Floral leaves ovate or broadly oblong, woolly only inside. Heads 10- to 15-flowered . . . . 11. *G. brevifolia.*
Floral leaves oblong, concealed in the abundant wool. Heads 5- to 10-flowered . . . . 12. *G. eriocephala.*

Hirnellia cotuloides, Cass., and *Crossolepis linifolia*, Less., from the short character given, Less. Syn. Comp. 269, 270, are probably species of *Gnephosis*, but insufficiently described for identification.

1. **G. (?) Burkittii,** *Benth.* A dwarf plant, our specimens scarcely above $\frac{1}{2}$ in. high. Leaves narrow-linear, closely surrounding the cluster of flower-heads and exceeding it, the cluster itself globular, 2 to 3 lines diameter, densely enveloped in white wool. Receptacle small. Partial heads 1-flowered, with numerous linear bracts, each with a green centre and scarious margins bordered by long wool, 2 or 3 inner ones almost entirely scarious. Corolla slender, minutely 4- or 5-toothed. Pappus of several short but fine and plumose scales.

S. Australia. Lake Gillies, *Burkitt.* The habit of this minute plant is that of the smallest species of *Angianthus*, but the numerous involucral bracts are rather those of *Gnephosis.*

2. **G. (?) eriocarpa,** *Benth.* Described by F. Mueller from a single fragment, a slender slightly branched stem or branch of about 4 in., with much of white wool about the inflorescence. Leaves linear-cuneate or linear, about $\frac{1}{2}$ in. long. Clusters of flower-heads globose, very young. Bracts narrow, scarious, woolly, with glabrous pink appendages, very numerous but most of them apparently belong to the partial involucres, a very few forming a general involucre to the cluster. Partial heads 1- or 2-flowered. Corolla slender, 5-toothed. Achenes densely covered with long wool, without any pappus.—*Skirrophorus eriocarpus*, F. Muell. Fragm. iii. 156.

N. S. Wales. Between Stoke's Range and Cooper's Creek, *Wheeler.* The inflorescence is much too young to be certain of the floral characters.

3. **G. macrocephala,** *Turcz. in Bull. Mosc.* 1851, i. 190. Stems erect, slender but rigid, 1 to $1\frac{1}{2}$ ft. high. Leaves linear, almost filiform, the upper ones short. Clusters of flower-heads ovoid when fully out, about $\frac{1}{2}$ in. long, with a very few short empty woolly outer bracts, the subtending bracts within the cluster narrow and shorter than the involucres. Receptacle cylindrical. Partial involucres nearly sessile, of about 4 outer persistent bracts, and about 3 or 4 inner deciduous ones much broader, rather longer and folded, all scarious, the tips of the same colour, erect and persistent. Florets solitary. Pappus broadly cup-shaped, crenulate.—*Cephalosorus gymnocephalus*, A. Gray in Hook. Kew Journ. iii. 153.

W. Australia, *Drummond, 4th Coll. n.* 202; Murchison river, *Oldfield.* Oldfield's specimens are more branched, the outer persistent bracts are narrower and more numerous, and the pappus shorter than in Drummond's, but they probably all belong to one species.

4. **G. skirrophora,** *Benth.* An annual, more or less woolly-white, with numerous stems, from 2 or 3 in. to nearly 1 ft. high, hard at the base. Leaves narrow-linear, almost filiform. Clusters of flower-heads globular, 3 to 4 lines diameter, with prominent florets, surrounded by 2 or 3 rows of small scarious woolly bracts, forming a general involucre, but much shorter than the partial heads, and without the radiating tips of *Myriocephalus.* Receptacle small, convex, hirsute, with long fine hairs, the persistent bases of the partial heads prominent. Involucre slightly compressed, the bracts scarious, 2 or 3 outer ones (one subtending?) slightly woolly at the top with a small spreading ovate coloured lamina, 3 or 4 inner ones broader, glabrous, without spreading tips, all exceedingly deciduous. Florets solitary, 4- or 5-merous.

Pappus a cylindrical cup toothed or jagged and nearly half as long as the corolla, usually adhering to and falling off with the thickened base of the corolla.—*Trichanthodium skirrophorum*, Sond. and Muell. in Linnæa, xxv. 190.

N. S. Wales. Dry Lake, near Menindie, *Victorian Expedition.*
Victoria. Murray river, *F. Mueller;* Wimmera, *Dallachy.*
S. Australia. Cudnaka, *F. Mueller*; towards Spencer's Gulf, *Waterhouse.*
W. Australia. Dirk Hartog's Island, *Milne.*

This has fewer and more deciduous outer bracts than most species, but it is much nearer allied to *Gnephosis* than to *Angianthus* in habit as well as in most characters.

5. **G. cyathopappa,** *Benth.* Rigid, erect, and corymbosely branched, some specimens appearing annual and simple at the base, others with a hard and woody base, with numerous stems, but none above 6 in. high, all nearly glabrous or woolly tomentose, especially about the inflorescence. Leaves linear, rather short. Clusters of flower-heads turbinate, very numerous in a dense corymb, surrounded by a few small outer empty bracts like the subtending ones, but without the yellow appendage. Receptacle small, convex or obovoid. Partial heads 2-flowered, very shortly stipitate and usually 2 within the same subtending bract. Bracts scarcely woolly, narrow, with a short broad yellow deciduous appendage, 4 or 5 outer ones of each involucre and the subtending one narrower and more persistent than the 4 or 5 inner very deciduous ones. Pappus cup-shaped, as long as the slender part of the floret, slightly toothed or jagged, falling off with the corolla.—*Cyathopappus gnephosioides* or *Cephalosorus gnephosioides*, F. Muell. Fragm. ii. 158.

N. S. Wales. Near Menindie, Darling river, *Victorian Expedition.*

6. **G. leptoclada,** *Benth.* A slender, erect, corymbosely branched annual, nearly glabrous. Leaves linear, almost filiform. Clusters of flower-heads depressed-globular, 3 to 4 lines diameter, surrounded by a few narrow-oblong leafy bracts or floral leaves shorter than the florets. Receptacle rather broad, convex. Partial heads 2-flowered, very shortly stipitate. Involucral bracts all scarious and deciduous, with a small yellow deciduous appendage, 4 or 5 outer ones (1 subtending?) narrow and about 4 inner rather broader ones. Pappus cylindrical, cup-shaped, slightly jagged.—*Cephalosorus leptocladus*, F. Muell. Fragm. iii. 158.

W. Australia. Stony places, Barrel Well, Murchison river, *Oldfield*, a single specimen in Herb. F. Mueller, the inflorescence very rotten. When examined in a better state it may prove to be a variety of *G. cyathopappa.*

7. **G. arachnoidea,** *Turcz. in Bull. Mosc.* 1851, i. 189. A slender, erect, corymbosely-branched annual, usually 6 in. to 1 ft. high, glabrous, except the inflorescence or more or less woolly-tomentose. Leaves very narrow, linear or subulate. Clusters of flower-heads nearly globose, about 2 lines diameter, surrounded by a few small empty scarious bracts, without any appendage, the subtending ones within the cluster cuneate-oblong, all except sometimes the lower ones with a small broad deciduous lamina. Partial heads 2-flowered, very shortly stipitate and sometimes 2 or 3 within 1 subtending bract. Involucral bracts oblong-cuneate, with a short broad deciduous yellow lamina, about 6 outer ones apparently more persistent than the inner ones, which have a rather larger lamina. Pappus none apparent at the time of flowering.—*Nematopus effusus*, A. Gray in Hook. Kew Journ. iii. 150.

W. Australia, *Drummond, 3rd Coll. n.* 120. The flower-heads have not been seen in an advanced state.

Var. *foliata.* Rather more woolly and the bracts apparently more woolly and more numerous, but the specimens all in very young bud.—*Nematopus foliatus,* Sond. in Linnæa, xxv. 486.

S. Australia. Near Cudnaka, *F. Mueller.*

8. **G. tenuissima,** *Cass.; DC. Prod.* vi. 151. A very slender corymbose annual, at length glabrous, scarcely exceeding 6 in. in height. Leaves few, linear. Clusters of flower-heads obovoid-globular, very shining, the subtending bracts within the cluster and perhaps a few small outer empty ones with a broadly cuneate opaque base, and a very broad scarious lamina. Partial heads stipitate, 3- or 4-flowered. Involucral bracts rather numerous, the outer ones smaller, 4 to 6 or more inner ones oblong-cuneate, scarious, with a broad deciduous lamina. Pappus annular, jagged.

W. Australia. Sharks' Bay, *Gaudichaud;* Dirk Hartog's Island, *A. Cunningham.* All our specimens, from both sources, are far advanced, the florets and achenes almost all fallen away. The species will require further examination when seen in a better state.

9. **G. acicularis,** *Benth.* An erect glabrous annual, very slender although rigid, above 1 ft. high, the upper filiform branches bent in zigzag at every node, the subulate leaves usually in a line with the previous internode. Clusters of flower-heads in young buds nearly globular, shining, tapering at the base, surrounded by small empty scarious bracts. Partial heads about 6-flowered, stipitate. Involucral bracts numerous, oblong-cuneate, fringed except at the top with long woolly hairs, several of the inner ones with a readily detached lamina. Florets in the specimens too young to ascertain their structure and pappus.

W. Australia, *Drummond, 6th Coll. n.* 201. Of this I have seen a considerable number of specimens, showing a species allied to but evidently quite distinct from *G. tenuissima,* but unfortunately too young for a full description.

10. **G. pygmæa,** *Benth.* A dwarf annual, all our specimens under 1 in. high, at length glabrous except the inflorescence. Leaves narrow-linear, scarcely exceeding the flower-heads. Clusters of flower-heads globular, woolly, about 3 lines diameter, surrounded by a few almost leafy bracts, with scarious woolly-ciliate margins, or the inner 2 or 3 as well as the subtending bracts within the clusters wholly scarious and woolly-ciliate. Partial flower-heads 3- to 5-flowered, more or less stipitate. Involucral bracts about 5, outer ones narrow with rigid midribs and scarious woolly-ciliate margins, and 1, 2 or 3 inner ones rather smaller and completely transparent, all without appendages. Florets slender, 3- or 4-toothed. Pappus none, but the achenes have a few hairs, especially at the summit, where they are longer and almost paleaceous, assuming the appearance of a pappus.—*Crossolepis pygmæa,* A. Gray in Hook. Kew Journ. iii. 176; *Leptotriche perpusilla,* Turcz. in Bull. Mosc. 1851, ii. 73.

W. Australia, *Drummond, 5th Coll. Suppl. n.* 60.

11. **G. brevifolia,** *Benth.* A slender branching plant of 1 to 3 in., glabrous except the inflorescence. Leaves small, oblong. Clusters of flower-heads depressed-globular or hemispherical, 4 to 5 lines diameter, surrounded by a few oblong leafy bracts not exceeding the cluster, and very woolly inside.

Partial flower-heads 10- to 15-flowered. Involucral bracts several outer ones herbaceous and bordered by very long intricate woolly hairs, and about 5 inner ones membranous, transparent and ciliate with long wool. Florets 5-merous. Pappus none.—*Crossolepis brevifolia*, A. Gray in Hook. Kew Journ. iii. 175; *Myriocephalus cotuloides*, Turez. in Bull. Mosc. 1851, ii. 73.

W. Australia, *Drummond, 5th Coll. Suppl. n.* 61.

12. **G. eriocephala,** *Benth.* A slender decumbent branching annual of 2 to 3 in., very loosely and copiously woolly or the lower part glabrous. Leaves small, linear-oblong. Clusters of flower-heads 3 to 5 lines diameter, surrounded by a few oblong herbaceous bracts densely enveloped in wool. Partial heads 6- to 10-flowered. Involucres of several outer herbaceous bracts and about 4 inner transparent ones, all very densely woolly-ciliate. Pappus none.—*Crossolepis eriocephala*, A. Gray in Hook. Kew Journ. iii. 176; *Myriocephalus villosissimus*, Turez. in Bull. Mosc. 151. ii. 74.

W. Australia, *Drummond, 5th Coll. Suppl. n.* 62.

52. CALOCEPHALUS, R. Br.

(Leucophyta, *R. Br.*; Pachysurus, *Steetz*; Blennospora *and* Achrysum, *A. Gray.*)

Flower-heads numerous and usually more or less stipitate on a small and branching or globose or conical receptacle in an ovoid or globular dense cluster or compound head without any general involucre or surrounded by a few leafy or scarious bracts rarely exceeding the florets. Partial heads 2- or more-flowered. Involucre of several bracts, the outer ones like the subtending ones narrow and often more persistent, the inner ones broader transparent and very deciduous. Receptacle without scales. Florets hermaphrodite, tubular, 5-toothed, not at all or scarcely hardened at the base. Anthers more or less distinctly tailed. Style-branches nearly terete, truncate. Achenes usually compressed. Pappus of several narrow linear scales or bristles plumose-ciliate from the base or at the end only, all free or united in a ring at the base.—Annual or perennial herbs or rarely undershrubs or small shrubs, more or less cottony or woolly, white or rarely glabrous. Leaves alternate or in two species opposite, entire. Clusters of flower-heads terminal, sessile or pedunculate.

The genus is limited to Australia. It is very near to *Gnephosis*, differing chiefly in the pappus. The general receptacle is also sometimes broken up or slightly branched, the partial heads are thus more distinct and having often more florets connect the genus through *Cephalipterum* and *Gnaphalodes* with *Helipterum*.

Partial heads 2- or 3-flowered.
Leaves alternate.
Pappus plumose from the base. Involucral bracts without appendages.
Annual of 2 to 3 inches . . . . 1. *C. Drummondii.*
Branching shrub of about a foot . . . . 2. *C. Brownii.*
Pappus plumose at the end. Involucral bracts with small petal-like appendages . . . . 3. *C. Sonderi.*
Leaves mostly opposite. Pappus plumose chiefly at the end.
Leaves mostly obtuse. Clusters of flower-heads white . . . . 4. *C. lacteus.*
Leaves mostly acute. Clusters of flower-heads yellow . . . 5. *C. citreus.*

Partial heads 6- or more-flowered.
  Clusters of flower-heads dense and globular. Appendages of the involucral bracts radiating round the partial heads.
    Leaves linear-cuneate. Pappus plumose at the end . . . . 6. *C. angianthoides.*
    Leaves narrow-linear. Pappus plumose from the base . . . 7. *C. Francisii.*
  Clusters of flower-heads loose, the heads distinctly stipitate. Involucral bracts without any or with very small appendages. Pappus of woolly-plumose hair-like bristles.
    Leaves narrow-linear. Clusters of flower-heads terminal.
      Perennial or undershrub. Pappus-bristles distinct . . . . 8. *C. platycephalus.*
      Annual. Pappus-bristles united at the base in a broad paleaceous ring . . . . 9. *C. multiflorus.*
    Leaves ovate on long petioles. Clusters of flower-heads very densely woolly, clustered along the branches of the panicle . 10. *C. æruoides.*

(See also *Gnephosis Burkittii*, which has a pappus of plumose-ciliate scales, but they are very short, and *Angianthus tomentosus* in which the pappus-scales, only 3 in number, end in plumose bristles.)

1. **C. Drummondii,** *Benth.* A loosely woolly annual with several erect stems of 2 to 3 in. Leaves alternate, narrow-linear. Clusters of flower-heads ovoid-globular, 3 to 4 lines diameter or even more, without any or with a single floral leaf. Receptacle small or branching, subtending bracts within the cluster and a few outer empty ones narrow-oblong, scarious, woolly. Partial heads stipitate, 2-flowered, the outer persistent involucral bracts oblong-cuneate, very woolly near the top of the stipes; inner bracts about 4, longer than the others, ovate, concave, deciduous. Pappus very transparent, oblique, of about 8 to 10 unequal slender woolly-plumose bristles, united in a short cup at the base.—*Blennospora Drummondii*, A. Gray in Hook. Kew Journ. iii. 173.

W. Australia, *Drummond, 5th Coll. n.* 359, *and Suppl. n.* 68.

2. **C. Brownii,** *F. Muell. Rep. Babb. Exped.* 13. A much-branched rigid shrub rarely exceeding 1 ft. in height, white with a close woolly tomentum. Leaves alternate, linear, obtuse, mostly under 1 line and rarely 2 lines long. Clusters of flower-heads globular, 4 to 6 lines diameter, surrounded by a few floral leaves much shorter than the involucres. Receptacle nearly globular. Partial heads 3- or sometimes 2-flowered, raised on very short stipes or protuberances of the receptacle. Bracts all very deciduous, cuneate-oblong or linear-oblong, very woolly above the middle, the subtending ones rather broader, those of the involucre about 10, the inner scarcely broader than the outer, all without appendages. Pappus of about 8 to 10 linear plumose-ciliate scales as long as the corolla, slightly united at the base.—*Leucophyta Brownei*, Cass.; Less. Syn. Comp. 271; DC. Prod. vi. 152; Steetz in Pl. Preiss. i. 442; Hook. f. Fl. Tasm. i. 196.

Victoria. Seacoasts from Glenelg river to Wilson's Promontory, *F. Mueller*, *Robertson*, and others.

Tasmania. Port Dalrymple, *R. Brown*; seacoast of the north shores of the island, *J. D. Hooker*.

S. Australia. Common on the sandy seacoasts both of the mainland and Kangaroo Island, *F. Mueller* and others.

W. Australia, *Drummond, 4th Coll. n.* 124; Goose Island Bay, *R. Brown*; King George's Sound, *Fraser* and others; Swan River and Rottenest Island, *Preiss, n.* 31, 32; Point Irwin, *Oldfield*; Sharks' Bay, *Denham*. The Western specimens are generally more vigorous than the others, with longer leaves and larger heads.

3. **C. Sonderi,** *F. Muell. Rep. Babb. Exped.* 13. An erect branching loosely woolly annual, with a hard stem, attaining sometimes above 1 ft. in height. Leaves alternate, linear, the upper ones short and decurrent. Clusters of flower-heads yellow, ovoid or globose, rarely 5 lines long. Receptacle cylindrical, branched. Partial heads stipitate, 2- or 3-flowered. Subtending and outer involucral bracts 2 or 3, in the lateral heads more numerous, in the terminal one narrow but scarious and woolly-ciliate with a small lamina or appendage, a few inner ones broader, less ciliate, with a more prominent yellow lamina. Pappus of several very unequal scales united in a ring or cup at the base, and more or less produced into awns or bristles of which the longer ones are plumose at the end.

Victoria. Avoca and Murray rivers, *F. Mueller.*
S. Australia. Murray scrub, *F. Mueller.*

4. **C. lacteus,** *Less. Syn. Comp.* 271. A perennial with rather slender but hard ascending or erect stems of 1 to 2 ft., hoary or white with a close tomentum. Leaves linear, obtuse, the lower ones or nearly all opposite. Clusters of flower-heads oblong-ovoid or nearly globular, white, ¼ to ½ in. long, without any or only 1 or 2 very small leafy bracts under them. Receptacle cylindrical. Partial heads shortly stipitate, usually 3-flowered. Subtending bracts within the cluster short, scarious. Involucres of about 10 bracts, the outer ones narrow-cuneate, slightly or not at all ciliate, without appendages, the inner ones more deciduous, oblong, with a white broad lamina. Pappus of 6 to 10 very narrow linear scales united in a ring at the base and plumose at the end.—DC. Prod. vi. 151; A. Brongn. Voy. Coq. t. 60; Hook. f. Fl. Tasm. i. 196.

Victoria. Glenelg river, Port Phillip, Melbourne, Ballarat, Bacchus Marsh, etc., *F. Mueller* and others.
Tasmania. Risdon Cove, Derwent river, *R. Brown*; salt-marshes and seacoast, northern parts of the island, *J. D. Hooker.*
S. Australia. Bethanie, Onkaparinga river, Gawler river, *F. Mueller.*
W. Australia, *Drummond, 3rd Coll. n.* 118.

5. **C. citreus,** *Less. Syn. Comp.* 271. A perennial with a woody base, closely resembling *C. lacteus* and perhaps a variety, but the leaves are narrower, less obtuse or almost acute and the clusters of flower-heads yellow. Partial heads more sessile than in *C. lacteus*, the subtending bracts often very small, the outer involucral bracts more woolly at the base, the lamina of the inner ones bright yellow. Pappus-scales more plumose than in *C. lacteus* but variable, sometimes few only and slender, sometimes 8 to 10 and broader. —DC. Prod. vi. 151; Brongn. Voy. Coq. t. 60.

N. S. Wales. Lachlan river, *Fraser*; New England, *C. Stuart.*
Tasmania. Risdon Cove, Derwent river, *R. Brown.*
S. Australia. Guichen Bay, Gawler river, Mount Lofty, Mount Barker, *F. Mueller.*

6. **C. angianthoides,** *Benth.* A slender branching annual. Leaves linear. Clusters of flower-heads from globose and about 3 lines diameter to ovoid and fully 5 lines long, surrounded by a few scarious woolly bracts shorter than the florets. Receptacle small. Partial heads on a stalk-like rhachis, 6- or more-flowered. Subtending bracts within the cluster rather narrow, con-

cave, stipitate. Involucral bracts numerous, the outer ones linear-spathulate, ciliate with long woolly hairs, the broad scarious end glabrous but brown and not spreading, about 6 inner ones oblong scarious, glabrous, with a scarious yellow or white radiating reniform lamina. Pappus annular, jagged, with several bristles as long as the corolla and plumose towards the end with long cilia.—*Pachysurus angianthoides*, Steetz in Pl. Preiss. i. 442.

W. Australia, *Drummond, 5th Coll. n.* 254; foot of Mount Eliza, *Preiss, n.* 44.

7. **C. Francisii,** *Benth.* An annual with numerous slender stems of 3 to 6 in., glabrous or nearly so. Leaves very narrow-linear, short. Clusters of flower-heads globose or ovoid, about ½ in. diameter, without any or very few outer empty bracts. Receptacle small. Partial heads shortly stipitate, 6- to 20-flowered. Involucral bracts numerous, scarious, woolly-ciliate, the outer and subtending ones narrow with a small lamina, 12 or more inner ones with a short broad almost reniform spreading lamina, forming a ray round the partial head. Pappus of several exceedingly fine hair-like plumose bristles.—*Pachysurus Francisii*, F. Muell. Fragm. iii. 155.

W. Australia. Murchison river and Champion Bay, *Oldfield; Drummond, 6th Coll. n.* 161.

9. **C. platycephalus,** *Benth.* A perennial or undershrub, more or less woolly-white, with simple or branched stems of ½ to 1 ft. Leaves linear. Clusters of flower-heads globose and about ½ in. diameter or at length larger and irregularly lobed, without outer empty bracts. Receptacle small. Partial heads shortly stipitate, many-flowered. Involucral bracts very numerous, the outer ones narrow and woolly, the inner broader transparent and glabrous, all with a reniform folded lamina, radiating but very small and scarcely conspicuous when the flowers are fully out. Pappus of hair-like woolly-plumose bristles.—*Pachysurus platycephalus*, F. Muell. Fragm. iii. 154.

N. S. Wales. Darling river to the Barrier range, *Victorian Expedition, Dallachy* and *Goodwin.*

S. Australia. Towards Spencer's Gulf (a fragment only), *F. Mueller;* in the interior, *M'Douall Stuart's Expedition.*

9. **C. multiflorus,** *Benth.* An erect branching annual, of 1 to 6 in., the white wool usually persistent. Leaves narrow-linear. Clusters of flower-heads often ½ in. diameter on the main stem, with the partial heads almost distinct, more compact and ¼ in. diameter on the side branches, all with a few outer leafy bracts or floral leaves, very woolly, and not exceeding the heads. Receptacle small. Partial heads stipitate, 10- to 15-flowered. Involucral bracts numerous, the outer ones persistent, with linear opaque centres and scarious woolly-ciliate margins; inner ones very deciduous, transparent, and slightly ciliate, with small yellow deciduous tips. Pappus of several very fine woolly-plumose bristles, united at the base in a broad paleaceous ring.—*Pachysurus multiflorus*, Turcz. in Bull. Mosc. 1851, i. 192; *Achrysum glomeratum*, A. Gray in Hook. Kew Journ. iv. 229.

W. Australia. *Drummond, 3rd Coll. n.* 117, *5th Coll. n.* 389.

10. **C. æruoides,** *Benth.* An annual, with a hollow, ascending, paniculately-branched stem of above 1 ft., the wool floccose and deciduous.

Leaves few, on long petioles, ovate or rhomboidal, the larger ones above 1 in. long. Clusters of flower-heads ovoid or globular, sessile and irregularly clustered on the branches of the panicle, mostly about ¼ in. diameter and very densely woolly. Partial heads not very numerous in the cluster, 10- to 15-flowered. Involucral bracts scarious, shorter than the florets, the outer and subtending ones woolly, with a persistent, rather rigid midrib; the inner ones entirely scarious. Pappus of several long, hair-like, woolly-plumose bristles.—*Pachysurus æruoides*, F. Muell. Fragm. iii. 154.

W. Australia. Moist places, Port Gregory, *Oldfield*. The foliage and aspect of this species are very different from those of any other *Angianthea*.

53. CEPHALIPTERUM, A. Gray.

Flower-heads several together, sessile in a large terminal nearly globular cluster or compound head. Involucres ovoid-turbinate, the bracts numerous, scarious, the inner ones with long, spreading, petal-like laminæ. Receptacle without scales. Florets numerous, all tubular, hermaphrodite, the innermost sterile, with undivided styles. Anthers tailed. Style-branches in the perfect florets truncate. Achenes densely woolly. Pappus of 3 to 6 shortly ciliate bristles, terminating in a plumose tuft, accompanied by an exterior oblique or cup-shaped scale.—Annual. Leaves alternate, entire. Stem simple, with a terminal cluster of flower-heads.

The genus is limited to a single species, endemic in Australia. It is closely allied to *Calocephalus*; but the more distinct flower-heads, with more numerous florets and large petal-like laminae of the inner involucral bracts, connect it with *Helipterum*, and the external scale of the pappus is peculiar.

1. **C. Drummondii,** *A. Gray in Hook. Kew Journ.* iv. 272. An erect annual of 1 ft. or more, sprinkled with short transparent hairs. Radical and lower leaves oblong-spathulate, narrowed into a long petiole; upper ones linear or lanceolate. Flower-heads rather numerous, in a single terminal nearly globular cluster of ¾ to above 1 in. diameter, without any or with only a very few small linear floral leaves. Involucres about 3 lines diameter, the outer bracts very thin and broad, the spreading white or pale yellow laminae of the inner ones 3 to 4 lines long. Florets about 12 to 15. Anther-tails very short. Pappus-bristles 3 to 6, as long as the corolla, shortly ciliate the whole length, the terminal tuft very prominent, the small outer scale varying from nearly regularly cup-shaped to very oblique and one-sided, entire or fringed by long hairs.

S. Australia. In the interior from the head of the Great Bight, *Delisser*.
W. Australia, *Drummond*; Bowes river and Champion Bay, *Oldfield*.

54. GNAPHALODES, A. Gray.

Flower-heads several, sessile in a dense cluster or compound head, surrounded by a few leafy bracts, each head many-flowered. Involucre ovoid, the bracts scarious, imbricate, very woolly, the inner ones with small radiating tips. Receptacle without scales. Florets all slender, tubular, hermaphrodite, 5-toothed. Anthers with fine tails. Style-branches truncate. Achenes glabrous. Pappus of about 5 elastically-spreading, rather broad, plumose bristles.—Dwarf branching annuals, more or less white-tomentose. Leaves alternate, entire. Clusters of flower-heads terminal.

The genus is limited to Australia. The habit is almost that of *Gnaphalium*, but there are no female florets. Like *Cephalipterum*, it connects the *Angianthеæ* with *Helichryseæ*.

Floral leaves broadly ovate. Pappus-bristles without any terminal tuft . . . . 1. *G. uliginosum.*
Floral leaves oblong. Pappus-bristles with a stipitate terminal tuft . 2. *G. condensatum.*
Floral leaves linear-filiform. Pappus-bristles without any terminal tuft . . . . 3. *G. filifolium.*

1. **G. uliginosum,** *A. Gray in Hook. Kew Journ.* iv. 228. A dwarf, diffuse, white tomentose annual, the central stems exceedingly short, the lateral ones often 2 to 3 in. long. Leaves small, petiolate, obovate. Clusters of flower-heads nearly ½ in. diameter, sessile amid broadly ovate or oblong woolly floral-leaves of 2 to 4 lines. Bracts of the involucre closely connected by an intricate wool. Florets numerous. Pappus-bristles plumose from the base, without any terminal tuft, spreading out elastically the moment they are released from the wool of the involucre.—*G. evacinum*, Sond. in Linnæa, xxv. 520.

N. S. Wales. Darling river, *Victorian Expedition, Bowman.*
Victoria. Murray river and Wimmera, *Dallachy.*
S. Australia. From the Murray to the head of Spencer's Gulf, *F. Mueller.*
W. Australia, *Drummond, 1st Coll. also n.* 69, *and 5th Coll. n.* 360; Bowes and Murchison rivers, *Oldfield;* Gardiner river, *Maxwell;* Swan River, *Preiss, n.* 2415.

2. **G. condensatum,** *A. Gray in Hook. Kew Journ.* iv. 228. Very near *G. uliginosum*, but the flower-heads are larger, in more compact clusters, almost sessile on the ground; the outer floral-leaves oblong, much longer than the cluster, and narrowed into a broad petiole, the inner ones shorter and ovate. Pappus as in *G. uliginosum*, but the bristles terminating in little stipitate tufted appendages.

W Australia, *Drummond, 5th Coll. n.* 363; Sharks' Bay, *M. Brown.*

3. **G. filifolium,** *Benth.* A dwarf branching annual, with very few woolly hairs, our specimen scarcely 1 in. high. Leaves linear-filiform, the floral ones closely surrounding the clusters of flower-heads and exceeding them. Clusters dense, nearly globular, 2 to 3 lines diameter. Involucres loosely woolly, the bracts rather numerous, mostly with very short broad and obtuse white radiating tips. Florets very few. Pappus of 5 plumose-ciliate narrow scales or bristles.

W. Australia. Murray river, *Oldfield.* I have only seen a single specimen with the florets still in bud, but there seems to be no doubt of its belonging to this genus.

55. CRASPEDIA, Forst.

(Richea, *Labill.;* Pycnosorus, *Benth.*)

Flower-heads numerous, sessile or nearly so on a convex oblong or cylindrical receptacle, in a globular or ovoid dense cluster or compound head, surrounded by several more or less scarious bracts, forming a general involucre not exceeding the florets. Partial heads 3- to 8-flowered. Involucre of

several scarious bracts, the tips sometimes coloured but not radiating, and similar bracts or scales on the partial receptacle under each floret. Florets hermaphrodite, tubular, 5-toothed. Anthers more or less distinctly tailed. Style-branches nearly terete, truncate. Achenes usually compressed, silky-hairy. Pappus of several narrow-linear scales or bristles, plumose-ciliate from the base or towards the end only, all free or slightly united at the base. —Herbs, more or less woolly or silvery-silky, or rarely nearly glabrous. Leaves radical or alternate, entire. Clusters of flower-heads terminal, often rather large.

The genus extends to New Zealand. Of the four Australian species, one is probably the same as the common New Zealand one, the others are endemic. The genus is nearly allied to *Angianthus* and *Calocephalus*, differing from both in the scales of the receptacle within the partial heads.

Clusters of flower-heads pale-coloured, depressed-globular. Outer bracts ovate, with broad brown margins . . . . 1. *C. Richea.*
Clusters of flower-heads bright yellow, globular or ovoid. Outer bracts lanceolate, with brown margins . . . . 2. *C. pleiocephala.*
Clusters of flower-heads yellow, globular or slightly ovoid. Outer bracts very small, and concealed by the reflexed partial heads.
  Clusters about ½ in. diameter. Leaves at length glabrous above, loosely woolly underneath . . . . 3. *C. chrysantha.*
  Clusters about 1 in. diameter. Leaves silvery-silky on both sides . . 4. *C. globosa.*

1. **C. Richea,** *Cass.; DC. Prod.* vi. 152. A perennial, more or less woolly- or silky-white, or nearly glabrous, the tufted stock emitting thick fleshy fibrous roots and simple erect stems. Radical leaves from obovate-oblong to lanceolate, often several inches long and narrowed into a long petiole; stem-leaves narrow, stem-clasping, the upper ones small and distant. Cluster of flower-heads solitary, depressed-globular, ½ to 1 in. diameter, surrounded by about 6 to 10 ovate bracts shorter than the heads, with broad brown scarious margins, the subtending bracts within the cluster also ovate, with brown margins, the inner ones smaller and more scarious. Receptacle globular. Partial heads 6- to 8-flowered. Involucral bracts thin and transparent, ovate, or the inner ones oblong, shorter than the florets, passing into the similar scales of the receptacle. Florets with a slender tube and campanulate limb. Pappus of 10 to 15 filiform plumose scales or bristles, as long as the floret. —Hook. f. Fl. Tasm. i. 197; *C. uniflora*, Forst. Prod. 58; *Richea glauca*, Labill. Voy. t. 16, and Pl. Nov. Holl. ii. 123; *Podosperma pedunculare*, Sieb. Pl. Exs.; *Craspedia glauca* and *C. pilosa*, Spreng. Syst. iii. 441; Lindl. Bot. Reg. t. 1908; *C. fimbriata*, DC. Prod. vi. 152; *C. gracilis*, Hook. f. in Hook. Lond. Journ. vi. 118.

N. S. Wales. Port Jackson, *R. Brown*, *Sieber*, *n.* 334, and others; northward to Clarence river, *Beckler*, and New England, *C. Stuart*; southward to Illawarra, *A. Cunningham*, and Twofold Bay, *F. Mueller*; in the interior, to Molle's Plains, *Fraser*.

Victoria. Australian Alps, Munyong mountains, *F. Mueller*; Glenelg river, *Robertson*; Portland, *Allitt*; Wimmera, *Dallachy*.

Tasmania. Derwent river, *R. Brown.*; abundant throughout the island, ascending to 4000 ft., *J. D. Hooker*,

S. Australia. From the Murray river to St. Vincent's and Spencer's Gulfs, *F. Mueller*, and others.

W. Australia. From the South coast to Swan River, *Drummond*, *n.* 47, *Oldfield*, and others.

Var. *macrocephala.* Tall, nearly glabrous, with larger clusters of flower-heads.—*C. macrocephala*, Hook. Bot. Mag. t. 3415; DC. Prod. vi. 153; Hook. f. Fl. Tasm. i. 197.—Tasmania.

Var. *alpina.* Wool very dense and white.—*C. alpina*, Backh. in Hook. Lond. Journ. Bot. vi. 119; Hook. f. Fl. Tasm. i. 198.—Tasmanian Alps and Mount Buller in Victoria.

Three forms, one nearly glabrous, another sprinkled with articulate spreading hairs, and the third white, with long silky wool, appear at first sight very distinct, but the indumentum is sometimes mixed, and has no relation to the shape of the leaves or other differences.

2. **C. pleiocephala,** *F. Muell. in Linnæa*, xxv. 404. Apparently annual, but rather robust, branching at the base into erect or ascending stems, mostly simple, of about 1 ft., more or less woolly-hairy. Leaves lanceolate or linear, the lower ones petiolate, often 2 in. long, the upper ones sessile stem-clasping or decurrent. Cluster of flower-heads either solitary terminal and globular, 4 or 5 lines diameter, or ovoid and ½ to ¾ in. long, and then often 2 smaller sessile ones close under it, each surrounded by lanceolate bracts with brown scarious margins, shorter than the florets, with a few inner ones quite scarious, and similar subtending bracts within the cluster. Receptacle cylindrical. Partial heads 3- to 6-flowered. Involucral bracts and scales of the partial receptacle scarious, with bright yellow tips, but scarcely dilated into distinct laminæ. Achenes silky-hairy. Pappus of several plumose bristles.

N. S. Wales. Darling river, *Victorian Expedition*; between Stokes Range and Cooper's Creek, *Neilson*.
S. Australia. Murray river, and east side of Flinders Range, *F. Mueller*.

The habit is that of *Calocephalus Sonderi*, but there appears to be always a scale under each floret.

3. **C. chrysantha,** *Benth.* A perennial, branching at the base, with ascending or erect flowering stems, not above 1 ft. long, and more slender than in *C. globosa*. Leaves linear, generally becoming glabrous above, woolly-white underneath, the upper ones few, small, and distant. Clusters of flower-heads terminal, globular or ovoid, not above ½ in. diameter, surrounded by few very small outer bracts, the subtending bracts within the clusters narrow, brown but scarcely scarious, shorter than the florets, woolly at the base. Receptacle oblong. Partial heads 4- to 6-flowered. Involucral bracts and scales of the receptacle thin and transparent, obovate-oblong, shorter than the florets. Pappus-bristles much more paleaceous than in *C. globosa*, and often here and there connate, scarcely plumose below the middle, very much so towards the end, and bright yellow.—*Calocephalus (?) chrysanthus*, Schlecht. Linnæa, xx. 592; *Pycnosorus chrysanthus*, Sond. in Linnæa, xxv. 492; *P. globosus*, Mitch. Trop. Afr. 323; not of Benth.

Queensland. Maranoa river, *Mitchell*; Peak Downs, *F. Mueller*.
N. S. Wales. Head of the Gwydir, *Leichhardt*; Lachlan river, *A. Cunningham*; Darling river, *Victorian Expedition*.
Victoria. Geelong, *F. Mueller*; Wimmera, *Dallachy*.
S. Australia. Near Bethanie, *Behr*; Light river, *F. Mueller*; Cooper's Creek, *Howitt's Expedition* (a small specimen, with more oblong clusters of flower-heads. Flowers smaller. Pappus more slender and more plumose).

4. **C. globosa,** *Benth.* Apparently perennial, with erect, simple rigid

stems of 1 to 3 ft., silvery-white with a close wool. Lower leaves oblong, linear, or lanceolate, often several inches long; upper ones few, small, and distant, all silvery-white on both sides. Clusters of flower-heads solitary and terminal, globular, bright yellow, $\frac{3}{4}$ to 1 in. diameter, without any general involucre. Receptacle convex, hollow. Subtending bracts within the cluster narrow and short, woolly-ciliate as well as the receptacle. Partial heads 6- to 8-flowered. Involucral bracts and scales of the receptacle ovate or oblong, concave, very thin and transparent, with yellowish tips, but not spreading. Pappus of 12 to 15 plumose bristles.—*Pycnosorus globosus*, Benth. in Hueg. Enum. 67; DC. Prod. vi. 153.

Victoria. Wimmera, *Dallachy*.

S. Australia. South coast, *R. Brown*; Cudnaka, and near Lake Torrens, *F. Mueller*. Mount Searle, *Warburton*.

56. CHTHONOCEPHALUS, Steetz.

(Chamæsphærion, *A. Gray*; Gyrostephium, *Turcz.*; Lachnothalamus, *F. Muell.*)

Flower-heads numerous and sessile on a small receptacle, in a globular or depressed cluster or compound head, surrounded by a few more or less scarious or leafy bracts, forming an irregular general involucre. Partial heads few- or many-flowered. Involucre of several scarious bracts, the outer ones rarely with leafy tips, and similar bracts or scales on the partial receptacle under each floret. Florets hermaphrodite, tubular, 4- or 5-toothed. Anthers more or less distinctly tailed. Style-branches nearly terete, truncate. Achenes usually somewhat compressed, glabrous. Pappus none or short, annular, fringed and very deciduous.—Very dwarf branching or tufted annuals. Leaves radical or alternate, entire. Clusters of flower-heads sessile.

The genus is endemic in Australia. It connects the *Angianthеæ* with the following genera, the flower-heads being more closely clustered than in the latter, but yet with a few floral leaves occasionally intervening between them.

Stems 1 to 2 in. long. Involucral bracts with broad obtuse tips. No pappus . . . . 1. *C. tomentellus.*
Stemless plants, with the sessile cluster of flower-heads surrounded by the radiating radical leaves.
  Involucral bracts with broad obtuse tips. No pappus . . . . . 2. *C. pseudevax.*
  Involucral bracts with rigid acute tips. Pappus a very deciduous fringed ring . . . . 3. *C. pygmæus.*

1. **C. tomentellus,** *Benth.* A small annual, branching from the base with ascending or erect stems of 1 to 3 in., more or less woolly. Leaves obovate or the upper ones oblong, under $\frac{1}{2}$ in. long. Clusters of flower-heads terminal, globose, 3 to 4 lines diameter, surrounded by 3 or 4 broad scarious bracts, and sometimes by 1 or 2 small leafy ones. Heads globular, many-flowered. Involucre of about 5 linear-spathulate or oblong herbaceous bracts with densely woolly margins and scarious tips. Receptacle with ovate transparent woolly scales under each floret. Corollas 5-toothed or rarely 4-toothed. Achenes glabrous, without any pappus.—*Lachnothalamus tomentellus*, F. Muell. Fragm. iii. 156.

W. Australia. Murchison river, *Oldfield*; Useless Harbour, Sharks' Bay, *M. Brown* (with larger clusters of flower-heads and smaller involucral bracts).

2. **C. pseudoevax,** *Steetz in Pl. Preiss.* i. 445. A small annual with scarcely any stem, consisting of numerous sessile flower-heads, forming patches of ½ to 1 in. diameter, surrounded by a few oblong spreading leaves, ¼ to ½ in. long, forming as it were a general involucre, with rarely a leaf or two protruding between the heads, there are also immediately under most of the heads or at least the outer ones 2 or 3 linear leafy bracts more or less woolly with scarious tips not exceeding the heads. Heads ovoid-globular, nearly 2 lines diameter, consisting of numerous broad imbricate scarious bracts or scales, very few or even only one of the outer ones empty, each of the others with a floret in its axil not exceeding the bract. Corolla very slender, 4-toothed. Pappus none.—*C. Drummondii*, A. Gray in Hook. Kew Journ. iii. 178.

N. S. Wales. Between Darling river and Cooper's Creek, *Neilson.*
Victoria. Murray river, *Dallachy.*
S. Australia. Lake Gillies, *Burkitt.*
W. Australia. Swan River, *Drummond*, 1*st Coll.*; Avon river, *Preiss, n.* 2114 *b*; Murchison river, *Oldfield.*

Preiss's and Drummond's specimens appear to me to have precisely the same structure; the scales of the receptacle become stiffer as the fruit ripens and slightly impressed at the base by the thickening of the achene. There appear however to be 2 forms, the one with larger browner scales, the other with smaller white ones; the two are sent as one by Oldfield, separately in other collections, but as the former are always in flower, the latter in fruit, the difference may be owing to age.

3. **C. pygmæus,** *Benth.* A dwarf stemless plant, the narrow-linear radical leaves forming an involucre round a sessile depressed-globular cluster of flower-heads of 3 to 5 lines diameter. Partial heads about 5- to 7-flowered. Involucral bracts 1 or 2 and the scales of the receptacle with lanceolate acute nearly white rigid tips projecting beyond the florets, a few scales in the centre of the head usually empty. Corollas slender, 3- or rarely 4-toothed. Achenes glabrous. Pappus a fringed scaly ring, very deciduous.—*Chamæsphærion pygmæum*, A. Gray in Hook. Kew Journ. iii. 177; *Gyrostephium rhizocephalum*, Turcz. in Bull. Mosc. 1851, ii. 77.

W. Australia, *Drummond*, 5*th Coll. n.* 55.

SUBTRIBE II. HELICHRYSEÆ.—Flower-heads pedunculate or rarely almost sessile but distinct and not forming a compound head. Florets either all tubular and hermaphrodite or a few of the outer ones (rarely the whole outer row or even two rows where the florets are numerous) female and either very slender or rarely larger and irregular or ligulate.

57. IXODIA, R. Br.

Involucre ovoid, the bracts imbricate, appressed, dry and glutinous, the inner ones with white spreading laminæ. Receptacle shortly conical, bearing scales closely rolled round each floret. Florets all tubular, hermaphrodite.

5-toothed. Anthers tailed. Style-branches truncate. Achenes without any pappus.—Erect shrub. Leaves alternate, entire. Flower-heads rather small, in terminal corymbs.

The genus is limited to a single species, endemic in Australia. It is very near *Ammobium*, differing only in the involute scales of the receptacle and in the want of any pappus.

1. **I. achilleoides,** *R. Br. in Bot. Mag. t.* 1534. An erect glabrous and glutinous shrub. Leaves linear-lanceolate or slightly spathulate, usually acute and mostly above 1 in. long, more or less decurrent on the stem. Flower-heads in a dense terminal corymb, very much resembling those of an *Achillea*, the white petal-like radiating laminæ of the inner involucral bracts imitating the ray-florets of that genus. Involucre without the ray, 2 to 3 lines long, the outer bracts closely appressed, glutinous, with green centres and often slightly woolly. Scales of the receptacle jagged at the end and the outer ones sometimes produced into a small white appendage. Achenes oblong-cylindrical, slightly papillose-pubescent.—DC. Prod. vi. 154; Sond. in Linnæa, xxv. 495; *I. ptarmicoides*, F. Muell. in Linnæa, xxv. 405; *I. alata*, Schlecht. in Linnæa, xx. 493; Sond. l. c. xxv. 495.

Victoria. Rocky places in the Grampians, *F. Mueller*; common at the mouth of the Glenelg towards Portland, *Robertson*, *Allitt*.

S. Australia. Memory Cove and Port Lincoln, *R. Brown*; rocky places, chiefly near the coast, from the Murray to St. Vincent's and Spencer's gulfs, and Kangaroo Island, *F. Mueller*, *Wilhelmi*, and others.

There are usually two forms, of which the extremes look very different, *I. achilleoides*, with narrow leaves, obtuse or with recurved points, not very decurrent, and with small flower-heads, and *I. alata*, with broader more acute and more decurrent leaves and larger flower-heads, but there are many specimens equally referable to the one or to the other.

58. AMMOBIUM, R. Br.

Involucre hemispherical, the bracts either petal-like and spreading or scarious and more appressed. Receptacle more or less convex with flat or slightly concave scales between the florets. Florets all tubular, hermaphrodite, 5-toothed. Anthers with fine tails. Style-lobes truncate. Achenes 4-angled. Pappus a membranous cup, either truncate and entire or more or less produced into 2 or 4 unequal teeth or short awns.—Herbs more or less white-tomentose. Leaves entire. Flower-heads solitary, terminating the stem or branches.

The genus is limited to Australia.

Involucral bracts white, petal-like, spreading, longer than the florets. Stem winged and branching	1. *A. alatum.*
Involucral bracts scarious, jagged or undulate, shorter than the florets. Stems simple, single-headed. Leaves shortly decurrent .	2. *A. craspedioides.*

1. **A. alatum,** *R. Br. in Bot. Mag. t.* 2459. An erect, branching, white-tomentose herb, attaining 2 or 3 ft., the stems bordered by wings decurrent from the margins of the leaves. Radical leaves lanceolate, several inches long, narrowed into a long petiole; stem-leaves small and distant. Involucral bracts in many rows, spreading to about ¾ in. diameter, the white petal-like laminæ broadly ovate, the inner ones ¼ in. long on very short claws,

the outer ones shorter and sessile. Florets numerous. Scales of the receptacle rigid, slightly concave, mucronate. Teeth or awns of the pappus-cup very variable, usually very small.—DC. Prod. vi. 153; Gaudich. in Freyc. Voy. 467. t. 90 (*A. spathulatum* on the plate); Sweet, Brit. Fl. Gard. t. 48.

N. S. Wales. Hunter's River, *R. Brown;* sandy plains near Bathurst and on the Macquarrie, *A. Cunningham*, *Fraser;* Cardington, *Ramsay;* New England, *Beckler.*

2. **A. craspedioides,** *Benth.* Stock perennial, with simple single-headed stems of 1 to 2 ft., loosely woolly as well as the under side of the leaves. Leaves chiefly radical, oblong-lanceolate, narrowed into a petiole, entire, 3 to 4 in. long, scabrous-hirsute on the upper side; stem-leaves narrow, shortly decurrent, the upper ones small and distant. Involucres about 1 in. diameter, the bracts ovate, scarious, straw-coloured, rigid at the base, the outer ones short and rigid, all much shorter than the florets. Scales of the receptacle very broad, rigidly scarious, truncate and jagged at the end. Florets numerous. Anthers with rather long fine tails. Style-lobes truncate, penicillate. Pappus-cup with awns usually rather longer and more rigid than in *A. alatum.*

N. S. Wales. Near Nangas, *M'Arthur.*

59. CASSINIA, R. Br.

(Achromolæna, *Cass.;* Apalochlamys *and* Rhynea, *DC.*)

Involucre narrow-ovoid or oblong, the bracts imbricate, scarious or coloured, without any or, in species not Australian, with small radiating laminæ. Receptacle with scarious chaffy scales between the florets. Florets few, all hermaphrodite, tubular, 5-toothed or, in species not Australian, a very few of the outer ones slender and female. Anthers very shortly or obscurely tailed. Style-branches nearly terete, truncate. Achenes short, angular or nearly terete, usually papillose. Pappus of several simple entire or minutely denticulate capillary bristles, in a single row and slightly cohering in a ring at the base.—Shrubs or rarely herbs. Leaves alternate, entire. Flower-heads small, numerous, in terminal corymbs or panicles.

Besides the Australian species, which are endemic, there are four from New Zealand and one from S. Africa (*Rhynea*, DC.), all differing slightly from the Australian ones in the small white radiating laminæ of their inner involucral bracts. The genus is closely allied on the one hand to *Humea*, on the other to the small-headed *Helichrysa*, with precisely the same habit, differing from the former in the pappus and from both in the scales of the receptacle. A few scales may indeed be occasionally found among the central florets of a few species of *Helichrysum*, especially when they are sterile, but in *Cassinia* they subtend the fertile florets.

Shrubs with small or narrow rigid leaves. Florets under 10.
  Corymbs dense, sessile and shorter than the upper leaves.
    Involucres linear, sessile and very densely packed, the bracts tipped with yellow. Florets usually 2. Leaves scabrous-hirsute . . . . 1. *C. leptocephala.*
    Involucres oblong, the bracts without coloured tips. Florets usually 4. Leaves smooth above.
      Leaves lanceolate. Involucral bracts thinly scarious, very obtuse, shorter than the florets . . . . 2. *C. compacta.*

Leaves narrow-linear. Involucral bracts narrow, scarcely obtuse, as long as the florets . . . . 3. *C. tenuifolia.*
Corymbs flat or convex, dense, but much exceeding the upper leaves.
Leaves mostly oblong, under ¾ in. long, glabrous and smooth above. Involucral bracts broad, white or straw-colour . . 4. *C. denticulata.*
Leaves lanceolate or linear, acute, mostly 1 to 2 in. long, glabrous and smooth above.
Involucral bracts white or pale straw-colour . . . . 5. *C. longifolia.*
Involucral bracts bright yellow . . . . 6. *C. aurea.*
Leaves narrow-linear, obtuse or with recurved points, tuberculate, muricate or hispid above, very rarely nearly smooth . . 7. *C. aculeata.*
Panicles pyramidal or not longer than broad, loose or rather compact. Leaves narrow-linear with small straight or recurved points.
Branches cottony-white. Leaf-points usually recurved . . . 8. *C. lævis.*
Branches and leaves glabrous or slightly viscid. Leaf-points usually straight . . . . 9. *C. quinquefaria.*
Panicles long and loose.
Leaves narrow-linear, heath-like, under ½ in. long . . . . . 10. *C. arcuata.*
Leaves obovate or oblong, flat, under 1 in. long . . . . . . 11. *C. subtropica.*
Panicles almost reduced to oblong spikes. Leaves very small and erect. Florets solitary or rarely 2 in the head . . . . . . 12. *C. Theodori.*
Tall herb, with large flaccid leaves and ample loose panicles. Florets about 10 . . . . 13. *C. spectabilis.*

(*C. glossophylla*, Cass.; DC. Prod. vi. 155, described from Sieber's specimen, n. 592, is unknown to me. The character would refer to *C. denticulata*, but that De Candolle places it in the section with radiating laminæ to the involucral bracts, which I have not seen in any Australian species.)

1. **C. leptocephala,** *F. Muell. Fragm.* iii. 138. A shrub, the branches as well as the foliage, densely scabrous-hirsute with short rigid hairs. Leaves crowded, narrow-linear, mostly above 2 in. long, with closely revolute margins. Flower-heads sessile and crowded in compact clusters, forming a very dense sessile corymb, 1 to 2 in. diameter, shorter than the last leaves. Involucre linear, about 3 lines long, the bracts very narrow, appressed, thinly scarious, with yellow tips, not spreading. Florets 2 or rarely 3, with scales between them. Pappus-bristles not numerous.

N. S. Wales. Port Jackson, *F. Mueller.*

2. **C. compacta,** *F. Muell. Fragm.* i. 18. A shrub, the branches and under side of the leaves hoary with a very short close tomentum. Leaves lanceolate, scarcely acute, mucronulate, the margins recurved, 1½ to above 2 in. long, glabrous and smooth above. Flower-heads small, in a very dense rather flat sessile corymb shorter than the last leaves. Involucre straw-coloured or pale brown, narrow, scarcely above 1½ lines long, the bracts obtuse, thinly scarious on the margins, shorter than the florets. Florets 4 or rarely 5 or 6.

N. S. Wales. Mount Lindsay, on the borders of Queensland, at an elevation of 5000 feet, *W. Hill.*

3. **C. tenuifolia,** *Benth.* A low bushy shrub, the branches and under side of the leaves white with a close but dense tomentum. Leaves rather

crowded, very narrow-linear, obtuse or with short recurved points, above 1 in. long, smooth and glabrous above. Flower-heads (like those of *C. lævis*) in compact corymbs much shorter than the surrounding leafy branches in our specimens. Involucre oblong, about 2 lines long, the bracts narrow, the inner ones as long as the florets, white, without spreading tips. Florets usually 4, the scales of the receptacle very prominent.

N. S. Wales. Lord Howe's Island, near the shore, *Milne*. It is possible that this may be an abnormal state of *C. lævis*, but the inflorescence appears to be quite different.

4. **C. denticulata,** *R. Br. in Trans. Linn. Soc.* xii. 127. A shrub with glabrous or hoary-tomentose branches. Leaves oblong or broadly lanceolate, acute, often narrowed below the middle but half stem-clasping at the base, often all under ½ in. and rarely ¾ in. long, coriaceous, the margins recurved and minutely scabrous-denticulate or quite entire, glabrous and smooth above, hoary or rusty underneath with a minute scarcely perceptible tomentum, rarely loose and more copious. Flower-heads in a broad rather loose convex corymb much exceeding the leaves. Involucre broadly ovoid, 2 lines long or rather more, white or straw-coloured, the bracts very obtuse. Florets about 10 to 12, the receptacle-scales as long as the florets.—DC. Prod. vi. 155.

N. S. Wales. Port Jackson, *White, R. Cunningham, Woolls* and others; Illawarra, *A. Cunningham.*

5. **C. longifolia,** *R. Br. in Trans. Linn. Soc.* xii. 127. A shrub, the branches and under side of the leaves more or less hoary or white-tomentose or almost glabrous. Leaves linear or lanceolate, acute, narrowed at the base, mostly 1 to 2 in. long, the margins more or less recurved, glabrous and smooth on the upper side. Flower-heads numerous, in a broad rather dense flat or convex corymb much exceeding the last leaves. Involucres oblong, about 2 lines long, pure white in the original form, the bracts very obtuse, opaque. Florets usually about 6 to 8.

N. S. Wales. Port Jackson, *R. Brown, Woolls*; Illawarra, *Shepherd.*

Victoria. Bacchus Marsh and between Ovens river and Mayday Hills, *F. Mueller*; Portland, *Allitt.*

Var. *straminea.* Involucral bracts straw-coloured or pale brown.—*C. longifolia*, DC. Prod. vi. 156.—N. S. Wales, *F. Mueller*; New England, *C. Stuart*; Macleay and Clarence rivers, *Beckler.*

6. **C. aurea,** *R. Br. in Trans. Linn. Soc.* xii. 127. A shrub with the habit, foliage and inflorescence of *C. longifolia*, and probably a variety only, differing only in being usually rather more glabrous, and the involucres of a bright yellow.—Bot. Reg. t. 764; DC. Prod. vi. 155.

N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown, Caley, A. Cunningham, Woolls,* and others.

7. **C. aculeata,** *R. Br. in Trans. Linn. Soc.* xii. 127. A shrub with the branches and under side of the leaves more or less tomentose-pubescent. Leaves crowded, narrow-linear, obtuse or with small recurved points, the margins revolute, varying from ½ to 1½ in. long, usually scabrous or muricate on the upper side with very short rigid hairs or tubercles, very rarely smooth

or nearly so. Flower-heads very numerous, in terminal corymbs, usually many inches broad, sometimes small and dense but always much longer than the last leaves. Involucres narrow-ovoid, usually white but sometimes passing into pink or pale brown, the bracts obtuse, the small outer ones and the base of the inner ones often browner or more tomentose than in *C. longifolia.* Florets varying from 6 to 10 or even 12. Receptacle-scales as long as the florets.—DC. Prod. vi. 156; Hook. f. Fl. Tasm. i. 200; *Calea aculeata,* Labill. Pl. Nov. Holl. ii. 41. t. 185; *Cassinia affinis,* R. Br. in Trans. Linn. Soc. xii. 127; DC. Prod. vi. 156; *C. adunca,* F. Muell. in Linnæa, xxv. 496.

N. S. Wales. Blue Mountains, *Caley, Miss Atkinson* and others; Gabo island, *Maplestone.*

Victoria. Gipps' Land, Dandenong ranges, *F. Mueller;* Portland, *Allitt.*

Tasmania. Port Dalrymple, *R. Brown;* abundant throughout the colony, *J. D. Hooker.*

S. Australia. Murray scrub, Loddon, *F. Mueller.*

Var. *uncata.* Leaves short, sometimes almost smooth above, corymbs usually small.—*C. uncata,* A. Cunn. in DC. Prod. vi. 156.—Liverpool plains, *A. Cunningham;* Clarence river, *Beckler;* also in *Leichhardt's* collection.

Some specimens with slender leaves from Macalister river and other parts of Victoria, *F. Mueller,* with the inflorescence of the common form, have the involucral bracts more or less distinctly superposed in 4 or 5 rows, but do not otherwise differ from the species, and this character does not appear constant, at least in the dried specimens.

8. **C. lævis,** *R. Br. in Trans. Linn. Soc.* xii. 128. A rather slender shrub, the branches and under side of the leaves white-tomentose. Leaves narrow-linear with closely revolute margins, ½ to 1½ in. long, smooth above without any of the asperities of *C. aculeata.* Flower-heads smaller than in that species, in a shortly pyramidal rather dense panicle of 2 or 3 in., rarely condensed into a very convex corymb, and always looser than in *C. aculeata.* Involucre narrow, 1½ lines long, of a pure white, the bracts obtuse but narrow. Florets usually about 4 or 5.—DC. Prod. vi. 156; *C. rosmarinifolia,* DC. l. c.

Queensland. Dawson river, *Herb. F. Mueller;* Warwick, *Beckler.*

N. S. Wales. Liverpool plains and Lachlan river, *A. Cunningham;* New England, *C. Stuart;* Barrier and Mutanie ranges, *Victorian Expedition.*

S. Australia. Spencer's Gulf, *R. Brown.*

9. **C. quinquefaria,** *R. Br. in Trans. Linn. Soc.* xii. 128. A shrub, glabrous or nearly so, and sometimes appearing somewhat viscid. Leaves narrow-linear, with revolute margins, without asperities, mostly above 1 in. long. Flower-heads numerous, in pyramidal panicles, usually looser and larger than in *C. lævis* but not nearly so long as in the following species. Involucres narrow-oblong, scarcely 2 lines long, of a pale straw-colour, the bracts rather narrow, obtuse, distinctly or sometimes obscurely superposed in 5 rows. Florets about 5.—DC. Prod. vi. 157; *C. hygrophila,* A. Cunn. in DC. Prod. vi. 156; *Achromolæna viscosa,* Cass.; quoted by DC. l. c.

N. S. Wales. Blue Mountains, *Caley;* rocks on the Lachlan to the west of Bathurst and barren forest land, Argyle county, *A. Cunningham;* New England, *C. Stuart;* Darling Downs, *Herb. F. Mueller;* also in *Leichhardt's* collection.

10. **C. arcuata,** *R. Br. in Trans. Linn. Soc.* xii. 128. An erect shrub

of 5 or 6 ft., the branches and under side of the leaves white-tomentose. Leaves narrow-linear, obtuse or with short recurved points, the margins closely revolute. Flower-heads small and numerous in a long loose terminal panicle. Involucres cylindrical, often curved, not 2 lines long, straw-coloured white or brown, the bracts very thin, smooth and shining. Florets 2, 3 or rarely 4.—DC. Prod. vi. 156; *C. paniculata*, Behr and Muell. in Linnæa, xxv. 496; F. Muell. Pl. Vict. t. 43.

N. S. Wales. Darling river, *Dallachy.*

Victoria. Grampians, *F. Mueller;* N.W. portion of the colony, *L. Morton.*

S. Australia. Spencer's Gulf, *R. Brown;* Open places in the Murray scrub, *Behr.*

W. Australia. Middle Mount Barren, *Maxwell* (the specimens very young and therefore somewhat uncertain).

11. **C. subtropica,** *F. Muell. Fragm.* i. 17. Apparently a slender shrub, the branches tomentose-pubescent. Leaves petiolate, from obovate to elliptical-oblong, obtuse or mucronulate, under 1 in. long, glabrous and smooth above, white or rusty-tomentose underneath, the margins scarcely recurved. Flower-heads small and numerous, in a long loose terminal panicle. Involucre cylindrical, about 2 lines long, straw-coloured or reddish-brown, the bracts very thin. Florets usually 3, with receptacle scales between them as in the rest of the genus.

N. S. Wales. Mount Lindsay in the borders of Queensland, *W. Hill.*

12. **C ? Theodori,** *F. Muell. Fragm.* v. 148. An erect heath-like shrub, the branches and under side of the leaves cottony. Leaves almost scale-like, erect, 1 to 2 lines long, linear, obtuse, with revolute margins. Flower-heads sessile in short spikes, forming an oblong compact leafy panicle. Involucre narrow, 1 to 1½ lines long, the bracts few, narrow, shining, of a reddish-brown. Florets solitary, or (according to F. Mueller) sometimes 2 together. Achenes glabrous. Pappus-bristles fine, not thickened upwards.

N. S. Wales. Phonolith at the head of the Gwydir, *Leichhardt.* The specimens appear very different from any that I am acquainted with, but, the florets not being yet expanded, the characters cannot be fully observed. The single floret occupying the centre of the receptacle, there can be no scales besides the involucral bracts, but the inflorescence is very different from any as yet known in *Helichrysum*, and shows more affinity to that of *Cassinia arcuata.*

13. **C. spectabilis,** *R. Br. in Trans. Linn. Soc.* xii. 128. An erect robust herb of 3 to 5 ft., the stem hard, almost woody, clothed with white wool. Lower leaves oblong or obovate-oblong, shortly acuminate, broadly stem-clasping and often shortly decurrent, 4 to 6 in. long, pubescent above, more tomentose underneath, the upper ones smaller and lanceolate. Flower-heads very numerous, in a large loose terminal panicle. Involucre ovoid-turbinate, rather above 2 lines long, straw-coloured or pale brown, the bracts thinly scarious, mostly obtuse. Florets above 10 and often nearly 30, with narrow scales between them. Achenes small, prominently ribbed.—Bot. Reg. t. 678; *Calea spectabilis*, Labill. Pl. Nov. Holl. i. 42. t. 186; *Apalochlamys Billardieri*, DC. Prod. vi. 157; Hook. f. Fl. Tasm. i. 199; *A. Endlicherii* and *A. Kerii*, DC. l. c.

Victoria. Hills near the coast from the Glenelg to Gipps' Land, *F. Mueller* and others.

Tasmania. Northern parts of the island and islands of Bass's Straits, *J. D. Hooker* and others.

S. Australia. Kangaroo Island, *F. Mueller.*

60. HUMEA, Sm.

(Calomeria, *Vent.;* Hæckeria, *F. Muell.*)

Involucre oblong, the bracts imbricate, scarious. Receptacle small, without scales. Florets very few or solitary, hermaphrodite, tubular, 5-toothed. Anthers with fine, sometimes minute tails. Style-branches truncate. Achenes narrow, without any pappus.—Herbs or shrubs. Leaves alternate, quite entire. Flower-heads small and numerous in a loose terminal panicle or in compact corymbs.

The genus is limited to Australia, the habit is that of *Cassinia*, from which it differs in the absence of pappus and of receptacle-scales.

Flower-heads in a large loose terminal drooping panicle. Involucral bracts thin and scarious. Tall herb	1. *H. elegans.*
Flower-heads in dense corymbs. Involucral bracts rigid or petal-like. Shrubs.	
Glabrous or glutinous.	
Leaves terete, obtuse. Florets usually 3	2. *H. cassiniacea.*
Leaves keeled, acute. Florets usually solitary	3. *H. punctulata.*
Pubescent or tomentose. Leaves with revolute margins . . .	4. *H. ozothamnoides.*

1. **H. elegans,** *Sm. Exot. Bot.* i. *t.* 1. A robust erect biennial, attaining 5 or 6 ft. or more, glandular-pubescent or nearly glabrous, strongly scented. Lower leaves ovate-lanceolate or oblong, acuminate, stem-clasping or decurrent at the base, 6 to 10 in. long, rugose and scabrous-pubescent but green on both sides, the upper leaves small. Flower-heads very numerous in a large loose terminal panicle with gracefully pendulous branches. Involucre about 3 lines long, of a brown-red or pink, the bracts very thin and scarious, with small ones continued along the peduncles. Florets 3 or 4. Achenes glandular but otherwise glabrous.—DC. Prod. i. 158; F. Muell. Fragm. i. 17; *Calomeria amaranthoides*, Vent. Jard. Malm. t. 73.

N. S. Wales. Port Jackson, *R. Brown*, *Woolls* and others.

Victoria. Tambo, Monkey Creek, Snowy River, *F. Mueller;* Victoria ranges, *Wilhelmi.*

2. **H. cassiniacea,** *F. Muell. Fragm.* i. 17. An erect shrub of 3 or 4 ft., glandular-viscid and strongly scented, otherwise glabrous. Leaves linear, semiterete, obtuse, in some specimens rarely exceeding ½ in., in others nearly 1 in. long, clustered in the axils. Flower-heads very numerous in a very compact corymb of 2 to 3 in. diameter. Involucres white, about 2 lines long, the bracts narrow but obtuse, the inner ones almost as long as the florets. Florets usually 3. Achenes slightly fusiform, glabrous.—*Hæckeria cassiniæformis*, F. Muell. in Trans. Phil. Soc. Vict. i. 45; in Linnæa, xxv. 406; and in Hook. Kew Journ. viii. 156.

S. Australia. Port Lincoln, frequent, *R. Brown*, *Wilhelmi* and others.

3. **H. punctulata,** *F. Muell. Fragm.* iii. 137. An erect shrub or undershrub, with virgate branches, glutinous but otherwise glabrous. Leaves

linear-subulate, acute, keeled or triquetrous, under 1 in. long. Corymbs of flower-heads usually smaller than in the other species. Involucre straw-coloured, about 1½ lines long. Florets solitary in each head.—*Cassinia quinquefaria*, Sond. in Linnæa, xxv. 496, not of R. Br.

S. Australia. Spencer's Gulf, *R. Brown*; Flinders and Elder's Ranges, *F. Mueller*.

4. **H. ozothamnoides,** *F. Muell. Fragm.* i. 17. Branches erect from a woody base, 1 to 2 ft. high, more or less tomentose with a white deciduous wool or sometimes glutinous with scarcely any wool. Leaves very narrow-linear, mucronate-acute, with revolute margins, ½ to 2 in. long, soon becoming glabrous above, white-tomentose underneath. Flower-heads numerous in a compact corymb. Involucre about 2 lines long, straw-coloured or the inner bracts white towards the end. Florets 3 or 4.—F. Muell. Pl. Vict. t. 44; *Hackeria ozothamnoides*, F. Muell. in Trans. Phil. Soc. Vict. i. 45, and in Hook. Kew Journ. viii. 150.

Victoria. Dry places on Bucker's Creek, Upper Murray and Snowy rivers, *F. Mueller*.

61. PITHOCARPA, Lindl.

Involucre turbinate, the bracts imbricate, the outer ones small and appressed, the inner with coloured radiating laminæ. Receptacle flat, without scales. Florets numerous, all hermaphrodite, tubular, 5-toothed. Anthers with fine tails. Style-branches truncate. Achenes angular, without any pappus.—Erect branching annual. Leaves alternate, entire. Flower-heads in a loose erect panicle.

The genus is limited to a single species, endemic in W. Australia, differing from *Humea* in habit and involucre.

1. **P. corymbulosa,** *Lindl. Swan Riv. App.* 23. An erect annual, with long slender but rigid paniculate stems of 1 to 2 ft., slightly woolly and often nearly leafless. Leaves chiefly in the lower part of the stem, linear, soft, the upper ones very few, small and distant. Flower-heads on elongated peduncles. Involucres in the largest form about 3 lines long without the spreading laminæ, the outer bracts gradually smaller and extending down the summit of the peduncle, woolly, with rigid acute or almost obtuse glabrous tips, the inner ones with gradually increasing white spreading laminæ, the innermost nearly 3 lines long. Florets small. Achenes papillose.—Steetz in Pl. Preiss. i. 445; *P. major*, Steetz, l. c. 446.

W. Australia. King George's Sound and adjoining districts, *R. Brown* and others, and thence to Swan River, *Drummond*, 1*st Coll., also n.* 84, 169, *and* 5*th Coll. n.* 353, *Preiss, n.* 27, and others; Moore river, *Oldfield*; and eastward to the Mount Barren Range, *Maxwell*.

The plant varies much in the size of the flower-heads, which in some of Oldfield's specimens are larger even than in the *P. major* of Steetz, whilst in the slender specimens distinguished as *P. pulchella*, Lindl. Swan Riv. App. 23, the involucres are not 2 lines long without the laminæ, which are themselves not 2 lines long. I find no other difference, and the intermediate sizes are numerous.

62. ERIOCHLAMYS, Sond. and Muell.

Involucre broadly ovoid or almost globular, the bracts imbricate, the outer

ones herbaceous with revolute margins, the inner ones with broad scarious margins, without coloured laminæ. Receptacle slightly convex, without scales. Florets numerous, all hermaphrodite, tubular, 5-toothed. Anthers with very short points or tails. Style-branches broadly truncate. Achenes oblong, without any pappus.—Small annual. Leaves alternate, small, entire. Flower-heads woolly, sessile, solitary or clustered.

The genus is limited to a single species, endemic in Australia. Like *Pithocarpa*, it only differs from *Humea* in habit, involucre, and the number of florets. The inflorescence approaches sometimes that of *Angianthea*, but the individual heads are occasionally solitary and always more distinct than in that subtribe.

1. **E. Behrii,** *Sond. and Muell. in Linnæa*, xxv. 488. Very much branched, woolly-tomentose and usually diffuse and under 6 in. high, apparently annual, but sometimes larger with a hard almost woody base. Leaves linear, obtuse, often all under ¼ in. long. Flower-heads numerous, small, sessile amongst the last leaves and often crowded at the ends of the branches. Involucre more or less woolly, about 1½ lines long. Florets scarcely exceeding the involucre, the corollas often woolly at the base.

N. S. Wales. From the Lachlan and Darling rivers to the Barrier Range, *Victorian and other Expeditions.*

S. Australia. Between Salt Creek and Pine Forest, *Behr;* Murray river, Crystal Brook, Dombey Bay, *F. Mueller;* Port Lincoln, *Wilhelmi.*

63. ACOMIS, F. Muell.

Involucre broadly hemispherical, the bracts loosely imbricate, scarious, slightly thickened at the base. Receptacle convex, without scales. Florets numerous, all hermaphrodite, tubular, 5-toothed. Anthers with fine tails. Style-branches long, truncate. Achenes oblong or narrow, without any pappus.—Erect slender herbs. Leaves linear, entire. Flower-heads on slender terminal peduncles.

The genus is limited to Australia. It is allied to *Rutidosis*, with nearly the same involucre, differing in the absence of pappus and in the much more distinctly tailed anthers.

Leaves lanceolate. Corollas not dilated at the base. Usually woolly . 1. *A. Rutidosis.*
Leaves linear-subulate. Corollas dilated at the base. Nearly glabrous . 2. *A. macra.*

1. **A. Rutidosis,** *F. Muell. Fragm.* ii. 89. Erect, branching, and apparently annual, 1 to 2 ft. high, more or less woolly. Leaves petiolate, lanceolate or almost ovate-lanceolate, acute, narrowed at the base, 1 to 1½ in. long, losing the wool from the upper side. Involucres about 4 lines diameter, the outer bracts ovate, the inner ones oval-oblong. Florets slightly dilated upwards, but not at the base. Achenes narrow.—*Rutidosis acoma*, F. Muell. l. c.

N. S. Wales. Hastings river, *Beckler.*

2. **A. macra,** *F. Muell. Fragm.* iv. 145. Nearly glabrous, the stems slender, almost filiform. Leaves linear-subulate, acute, under 1 in. long. Involucre about 3 lines diameter, the bracts broadly lanceolate, thickened in the centre but not clawed. Corollas glandular and dilated over the achene at the base as in *Cotula*. Achenes oblong.—*Rutidosis macra*, F. Muell. l. c.

Queensland. Cape river, *Bowman.*

64. TOXANTHUS, Turcz.

(Anthocerastes, *A. Gray*.)

Involucral cylindrical, of very few narrow herbaceous nearly equal bracts. Receptacle small, without scales. Florets few, hermaphrodite, the corolla tubular, 4- or 5-toothed, continuous with the ovary, persistent and recurved. Anthers with short fine tails. Style-branches with lanceolate papillose tips. Achenes cylindrical, tapering at the top, without any pappus.—Dwarf annuals. Leaves alternate, entire. Flower-heads small, sessile or shortly pedunculate.

The genus is limited to Australia. The style is rather more that of *Asteroideæ* than of *Gnaphalieæ*, but the general character appears to be quite that of the latter tribe.

Involucral bracts recurved after flowering. Achenes distinctly beaked . 1. *T. perpusillus.*
Involucral bracts erect. Achenes tapering at the top but scarcely beaked 2. *T. Muelleri.*

1. **T. perpusillus,** *Turcz. in Bull. Mosc.* 1851, i. 177. A little slender diffuse annual, either scarcely ½ in. long and densely enveloped in wool, or lengthening out to 1 or 2 in. and becoming glabrous. Leaves linear. Flower-heads small, sessile in the tufts of leaves, or 2 or 3 together clustered at the ends of the branches. Involucral bracts 3 to 5, linear, rigid and recurved as the flowering advances. Corolla 4-toothed, woolly at the base. Achenes slender, striate, tapering into a beak continuous with the rigid persistent recurved corolla.—*Anthocerastes Drummondii*, A. Gray in Hook. Kew Journ. iv. 226; Sond. in Linnæa, xxv. 480.

S. Australia. Burra-Burra river and between Hutt and Broughton rivers, *F. Mueller*. **W. Australia,** *Drummond, 4th Coll. n.* 203; Murray river, *F. Mueller*.

2. **T. Muelleri,** *Benth.* A diffuse annual of ½ to 1 in., slightly glandular-pubescent. Leaves linear. Flower-heads small, terminal. Involucre about 1½ lines long, of 4 or 5 bracts, linear-lanceolate with slightly scarious margins. Florets 5 to 10, very slender, 4- or 5-toothed. Achenes terete, shortly hirsute, not distinctly beaked but shortly tapering at the top and continuous with the recurved corolla, which is usually persistent but sometimes at length deciduous.—*Anthocerastes Muelleri*, Sond. in Linnæa, xxv. 480.

S. Australia. Murray river, *F. Mueller*.

65. SCYPHOCORONIS, A. Gray.

Involucre cylindrical, of very few herbaceous nearly equal bracts. Receptacle small, without scales. Florets hermaphrodite, the corolla tubular, 5-toothed, deciduous. Anthers with short very fine tails. Style-branches with somewhat lanceolate obtuse papillose tips. Achenes cylindrical, crowned by a short herbaceous persistent cup outside the corolla.—Dwarf annual. Leaves alternate or here and there opposite, entire. Flower-heads shortly pedunculate.

The genus is limited to a single species, endemic in Australia, which Turczaninow was perhaps right in including in *Toxanthus*, to which it is closely allied, but differs in the achene continuous with a herbaceous cup outside the corolla, not with the corolla itself.

1. **S. viscosa,** *A. Gray in Hook. Kew Journ.* iv. 225. A little diffuse

annual of 1 to 2 in., sprinkled with short rigid glandular hairs. Leaves linear. Flower-heads small, terminal. Involucre about 2 lines long, of 4 or 5 linear bracts. Florets about 8 to 12, the corolla slender. Achenes linear, glandular.—Hook. Ic. Pl. t. 854; *Toxanthes major*, Turcz. in Bull. Mosc. 1851, ii. 64.

W. Australia, *Drummond, 5th Coll. n.* 53.

66. RUTIDOSIS, DC.

(Pumilo, *Schlecht.*; Actinopappus, *A. Gray.*)

Involucre hemispherical or ovoid, the bracts loosely imbricate, broad, very scarious, the inner ones with a broad more rigid base. Receptacle convex or small, without scales. Florets all hermaphrodite, tubular, 4- or 5-toothed. Anthers very shortly or not at all tailed. Style-branches truncate. Achenes oblong or obconical, scarcely compressed. Pappus of several chaffy scales entire jagged or divided into bristle-like lobes.—Annual or perennial herbs, usually woolly-tomentose. Leaves alternate, entire. Flower-heads terminal, pedunculate or rarely in small dense cymes.

The genus is limited to Australia. The involucre is much like that of *Podolepis*, in other respects the genus is allied to *Helichrysum*, but differs from both in the scale-like pappus.

Stock tufted with erect 1-headed stems.
  Leaves chiefly radical. Scapes under 6 in. high. Pappus-scales oblong-spathulate, obtuse . . . . 1. *R. leiolepis.*
  Stems leafy, slender, above 6 in. high. Pappus-scales lanceolate, acute, ciliate-plumose . . . . 2. *R. leptorrhynchoides.*
Annuals or perennials, erect, branching and cottony.
  Leaves decurrent. Pappus-scales deeply divided into bristle-like lobes . . . . 3. *R. Brownii.*
  Leaves not decurrent. Pappus-scales undivided.
    Anthers much exserted. Pappus-scales 5 to 7, spathulate, quite entire. Flowers yellow . . . . 4. *R. helichrysoides.*
    Anthers not exserted. Pappus-scales about 10.
      Flowers white. Pappus-scales cuneate obtuse, scarcely denticulate . . . . 5. *R. leucantha.*
      Flowers yellow. Pappus-scales lanceolate, acute, ciliate . 6. *R. Murchisonii.*
Small diffuse annual of 1 to 3 in. Flower-heads numerous and small . . . . 7. *R. Pumilo.*

(See also *Helipterum Pyrethrum* and *H. dimorpholepis*, in which the pappus-bristles are more or less scale-like.)

1. **R. leiolepis,** *F. Muell. in Trans. Vict. Inst.* 1855, 131, *and in Hook. Kew Journ.* viii. 149. Stock densely tufted or shortly branched and woody. Leaves chiefly radical, linear, with revolute margins, ¾ to 1½ in. long. Scapes 1-headed, under 6 in. long, with a few small leaves. Involucre broadly hemispherical, ¾ to 1 in. diameter, the inner bracts with a dry cuneate base and ovate or ovate-lanceolate scarious lamina, the outer ones short and scarious from the base. Receptacle very convex. Florets very slender. Achenes glandular-papillose. Pappus of 10 to 15 white oblong-spathula almost stipitate scales, as long as the achenes, minutely ciliolate.

Victoria. Rocks along Snowy River, *F. Mueller.*

2. **R. leptorhynchoides,** *F. Muell. Fragm.* v. 148. Stems from a tufted woody stock erect, leafy but simple and 1-headed, often exceeding

1 ft., usually glabrous, except a little loose wool near the base. Leaves narrow-linear with revolute margins, or the lower ones lanceolate and flat. Involucres broadly hemispherical, ½ to ¾ in. diameter, the bracts not ciliate and their broad claws longer in proportion than in the other species. Achenes papillose. Pappus of 10 to 15 narrow-lanceolate ciliate almost plumose scales.

N. S. Wales. Kingstown, Newcastle, *R. Brown*, *Leichhardt*.
Victoria. Grassy clumps about Nangeela, *Robertson*; near Station Peak, *Fullager*.
The species is allied in habit to *R. leiolepis*, in the pappus to *R. Menziesii*.

3. **R. Brownii,** *Benth.* An erect rather slender branching annual of ¾ to 1½ ft., more or less covered with cottony wool. Leaves lanceolate or linear, decurrent on the stem, silky-cottony underneath, becoming glabrous above. Peduncles terminal, long and slender, bearing a single small head. Involucre broadly hemispherical, not above 3 lines diameter, the bracts scarious, the shining straw-coloured tips of the inner ones not exceeding the florets. Achenes papillose. Pappus-scales not longer than the achene, deeply divided into bristle-like lobes.

N. Australia. Islands of the Gulf of Carpentaria, *R. Brown*.
Queensland Endeavour river, *Banks and Solander*.

4. **R. helichrysoides,** *DC. Prod.* vi. 159. A perennial with a hard woody stock and erect branching stems of 1 to 2 ft., cottony-white as well as the foliage. Leaves linear or the lower ones oblong-spathulate, 1 to 2 in. long, or the upper ones smaller, obtuse or with callous points, not decurrent. Flower-heads on terminal peduncles. Involucre broadly hemispherical, in some specimens all under ½ in. diameter, in others larger, the bracts cuneate at the base, with elegantly ciliate scarious transversely-wrinkled laminæ, loose but scarcely radiating. Florets yellow, 5-toothed. Anthers exserted. Achenes glandular-papillose. Pappus of 5 to 7 spathulate scales, about as long as the achene.—*R. auricoma*, F. Muell. in Linnaea, xxv. 408.

N. S. Wales. Wet flats, Molle's Pla[illegible] Macquarrie river, *Mitchell*; from the Lachlan and Darling rivers to the [illegible] *other Expeditions*.
Victoria. Murray river, *F. Mueller*; [illegible]
S. Australia. Cudnaka and Flinders [illegible], *F. Mueller*; Cooper's Creek and Wills Creek (with narrower and less ciliate involu[illegible] *Howitt's Expedition*.

5. **R. leucantha,** *F. Muell. Fragm.* i. 35. [illegible] tomentose, 1 to 2 ft. high and perhaps annual, although with [illegible] woody base. Leaves lanceolate or the upper ones linear, not dec[illegible] losing the wool on the upper side. Flower-heads on long peduncles, about the size and shape of those of *R. helichrysoides*, but the involucral bracts not ciliate and the florets white and rather more slender. Achenes glandular. Pappus of about 10 cuneate scales, slightly denticulate at the end.

N. Australia. Mackenzie river, *F. Mueller*.

6. **R. Murchisonii,** *F. Muell. Fragm.* i. 34. Erect and branching, rather slender, slightly woolly-tomentose, the specimens under 1 ft. high. Leaves linear, not decurrent. Flower-heads on long peduncles, smaller than in *R. helichrysoides*. Involucres broadly hemispherical, rarely ½ in. diameter, the laminæ of the bracts ovate, scarcely ciliate. Florets yellow, 5-toothed. Anthers not exserted. Achenes papillose. Pappus of 8 to 12 lanceolate, acute, ciliate scales.

Queensland. Burnett river, *F. Mueller*; Wide Bay, *Bidwill.*

7. **R. Pumilo,** *Benth.* A little slender branching annual, of ½ to 3 in., glabrous or slightly cottony about the inflorescence. Leaves linear, stem-clasping at the base, the lower ones sometimes opposite. Flower-heads very small, usually several in a dense terminal cyme, each one surrounded by 2 to 4 leafy bracts, rather longer than the head. Involucre hemispherical, 2 to 3 lines diameter, of about 8 to 10 broad very scarious bracts, as in the rest of the genus, but nearly equal, the claws of the inner ones very short. Florets sometimes only 3 or 4 in the lateral heads, usually numerous in the terminal ones, the corolla 4- or rarely 5-toothed. Achenes often curved. Pappus of 6 to 12 obovate or oblong-cuneate scales, obtuse and entire or minutely denticulate.—*Pumilo argyrolepis*, Schlecht. Linnaea, xxi. 448; Sond. in Linnaea, xxv. 487; *Pumilo Preissii*, Sond. l. c.; Hook. f. Fl. Tasm. i. 199, t. 53; *Styloncerus multiflorus*, Nees in Pl. Preiss. ii. 244; *Actinopappus pusillus*, Hook. f., and *A. Drummondii*, A. Gray in Hook. Kew Journ. iv. 226.

Victoria. Yarra river, *F. Mueller, Harvey.*
Tasmania. Trap rocks, West Head, Tamar river, and Georgetown, *Gunn.*
S. Australia. Near Tonunda, *F. Mueller.*
W. Australia, *Drummond, 5th Coll. n.* 67; Swan River, *Preiss, n.* 127; Kalgan and Vasse rivers, *Oldfield.*

Notwithstanding the dwarf slender habit of this little plant, it appears to me not to be generically separable from *Rutidosis.*

67. QUINETIA, Cass.

Involucre cylindrical, of very few nearly equal narrow bracts. Receptacle small, without scales. Florets very few, hermaphrodite, tubular, 4- (or 5-?) toothed. Anthers shortly or obscurely tailed. Style-branches subulate, almost acute. Achenes cylindrical, not beaked. Pappus of several scales, lanceolate at the base, tapering into a fine awn.—Small slender annual. Leaves alternate, entire. Flower-heads small, terminal or almost axillary.

The genus is limited to a single species, endemic in Australia. The style is somewhat anomalous in *Gnaphalieæ*, but in other respects it appears to be more nearly allied to them than to any other tribe.

1. **Q. Urvillei,** *Cass.; DC. Prod.* vi. 158. A little slender erect annual, of 2 to 4 in., more or less woolly-tomentose. Leaves petiolate, from linear-cuneate to broadly obovate, rarely above ½ in. long. Flower-heads very shortly pedunculate, terminal or appearing axillary from the shortness of the lateral shoots. Involucre about 2 lines long, of 3 or 4 oblong-linear bracts, slightly scarious on the edges. Florets 2 to 4, very slender. Achenes, when ripe, nearly as long as the involucre, silky-hairy at the top, and contracted at the base into a very short hairy stipes. Pappus-scales varying from 3 to 8, the awns as long as the achene itself.

W. Australia. King George's Sound, *D'Urville, Huegel*; Bowes and Blackwood rivers, *Oldfield.*

68. MILLOTIA, Cass.

Involucre cylindrical or almost ovoid, of few nearly equal narrow bracts. Receptacle small, without scales. Florets all hermaphrodite, tubular, 4- or

5-toothed. Anthers with fine, usually ciliate-plumose tails. Style-branches terminating in a very short cone. Achenes cylindrical, contracted into a slender beak. Pappus of fine barbellate or ciliate capillary bristles.—Small annuals. Leaves alternate, linear. Flower-heads small, on terminal peduncles.

The genus is limited to Australia. It differs from *Leptorhynchus* and *Waitzia* in the involucre, from other *Gnaphalieæ* in the slender beak of the achenes.

Pappus as long as the corolla, scarcely barbellate . . . . 1. *M. tenuifolia.*
Pappus shorter than the corolla, the bristles ciliate-plumose with a few long hairs . . . . 2. *M. Greevesii.*

1. **M. tenuifolia,** *Cass.; DC. Prod.* vi. 161. A slender erect annual, of 2 to 6 in. or rather more, simple or branched, hoary or white with close or woolly hairs, or becoming almost glabrous. Leaves narrow-linear, or the lower ones broader and contracted into a long petiole. Involucres varying from under 3 to above 4 lines in length, the bracts linear, herbaceous, hoary, with minute coloured tips. Florets 20 to 30, longer than the involucre. Achenes papillose or almost muricate, the slender beak very variable in length, the pappus of very shortly barbellate capillary bristles.—Steetz in Pl. Preiss. i. 456; Hook. f. Fl. Tasm. i. 209; Sond. in Linnaea, xxv. 503; *Senecio myosotidifolius*, Benth. in Hueg. Enum. 66; *Millotia myositidifolia*, Steetz in Pl. Preiss. i. 457; *M. glabra* and *M. robusta*, Steetz, l. c. 458.

N. S. Wales. Piper's Hill, *Fraser;* Mallee scrub, *Victorian Expedition.*

Victoria. About Melbourne, *Adamson;* Glenelg river and in the Grampians, *F. Mueller;* Wimmera, *Dallachy.*

Tasmania. Port Dalrymple, *R. Brown;* common in dry stony places, *J. D. Hooker.*

S. Australia. Fiedler's Section, *Behr;* from the Murray to St. Vincent's and Spencer's gulfs, *F. Mueller* and others.

W. Australia. King George's Sound, *R. Brown*, and thence to Swan River, *Huegel, Drummond, 5th Coll. n.* 365, *Preiss, n.* 66, 67, 68, 100, and others; Murchison river, *Oldfield;* eastward to the Great Bight, *Maxwell.*

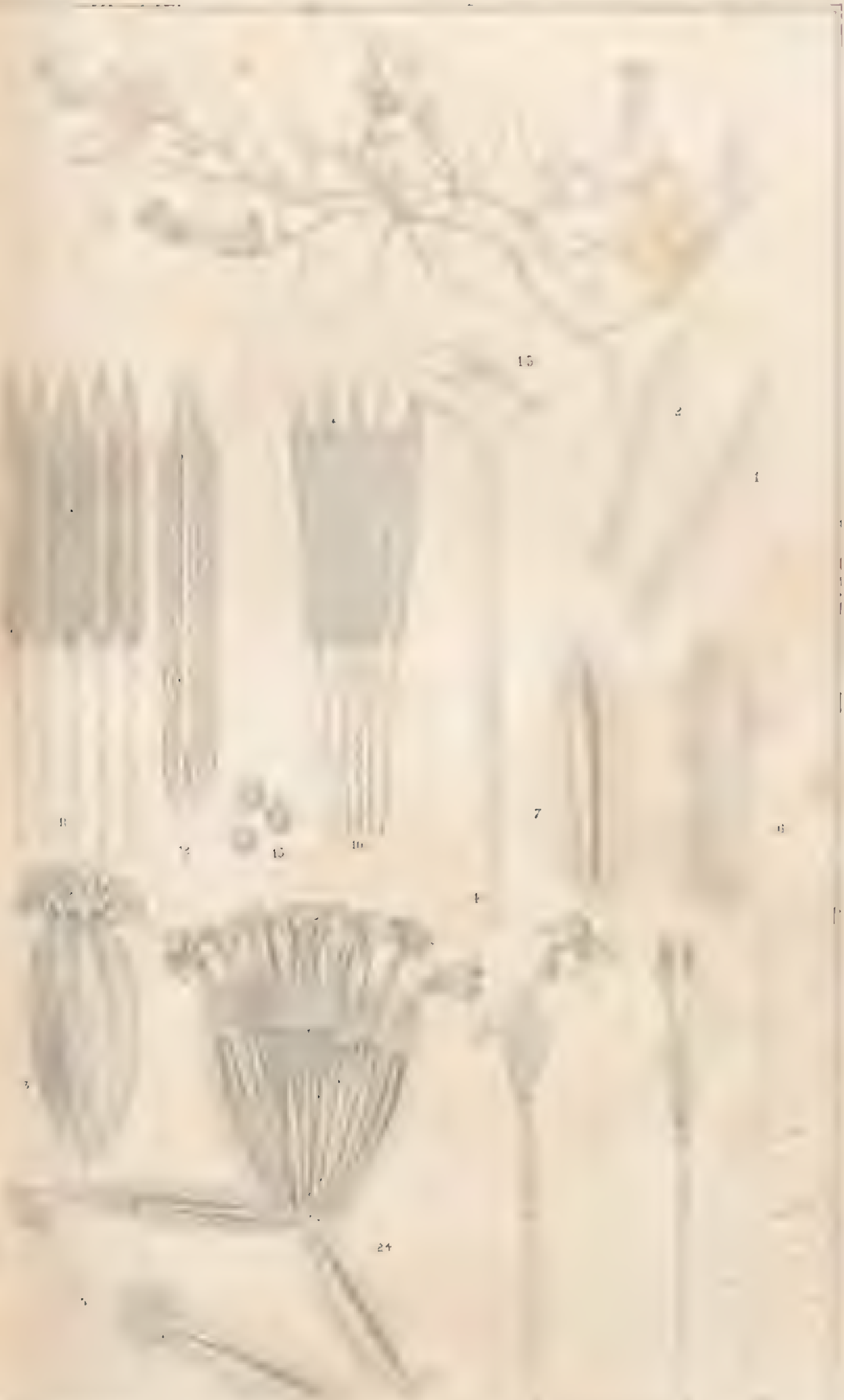
2. **M. Greevesii,** *F. Muell. Fragm.* iii. 18. *t.* 19. A slender erect or diffuse annual, under 6 in. high, more or less woolly-white or at length glabrous, except the inflorescence. Leaves filiform. Involucres about 2½ lines long, the bracts about 8 to 10, linear, with fine points, but densely cottony to the end. Florets usually fewer than in *M. tenuifolia*, longer than the involucre. Achenes slender, with long beaks. Pappus shorter than the corolla, the bristles very fine, ciliate-plumose with fine long hairs.

N. S. Wales. Desert near the Barrier Range, *Beckler.*

69. IXIOLÆNA, Benth.

Involucre campanulate or hemispherical, the bracts numerous, linear or narrow linear-lanceolate, herbaceous or rigid, the inner ones with small scarious or coloured tips, sometimes radiating. Receptacle flat or convex, without scales. Florets all hermaphrodite, tubular, 5-toothed, or rarely a very few outer ones female and filiform. Anthers with long fine tails. Style-branches slender, capitate or truncate at the end. Achenes angular or terete, not beaked. Pappus of fine capillary bristles, entire or shortly barbellate.—

Tab. XIX



[illegible]   De Gruchy & Leigh, imp

Millotia Greevesii. F.M.

Herbs, either annual or with a perennial base. Leaves alternate, entire. Flower-heads on terminal peduncles.

The genus is limited to Australia. It is nearly allied to *Helichrysum*, differing chiefly in the involucre.

Involucres hemispherical, the bracts very narrow, the inner ones with small scarious tips, not coloured.
Pappus scarcely barbellate, scarcely half as long as the corolla . . . 1. *I. brevicompta.*
Pappus barbellate, nearly or rarely quite as long as the corolla.
Leaves mostly lanceolate, acute. Pappus-bristles about 8 to 12 . 2. *I. leptolepis.*
Leaves oblong-spathulate. Pappus-bristles 20 to 30 . . . . 3. *I. supina.*

(See also *Athrixia tenella*, which has the female florets few and scarcely larger than the others, but the involucral bracts very fine, with filiform points.)

Involucres campanulate, the bracts linear or linear-lanceolate. Pappus as long as the corolla.
Involucral bracts woolly, the inner ones with small scarious tips, not coloured . . . . 4. *I. tomentosa.*
Involucral bracts glandular-pubescent, the inner ones with small white radiating laminæ . . . . 5. *I. viscosa.*

(See also *Helichrysum podolepideum*, allied to *I. tomentosa*, but with small linear scarious laminæ to all the bracts.)

1. **I. brevicompta,** *F. Muell. Fragm.* i. 53. A branching, erect or decumbent annual, or perhaps perennial, with a hard almost woody base, more or less cottony-white. Leaves linear or lanceolate, the larger ones stem-clasping at the base. Peduncles long, leafless or with a few very small linear leafy bracts. Involucre hemispherical, 4 to 5 lines diameter, the bracts numerous, linear, rather rigid, pubescent, the inner ones with small narrow scarious tips. Florets very numerous, longer than the involucre, all hermaphrodite. Achenes glabrous, angular. Pappus of about 10 bristles, much shorter than the corolla, shortly united at the base, simple or scarcely barbellate.

Queensland. Peak Downs, *F. Mueller*, Narran, Maranoa, and Balonne rivers, *Mitchell.*

N. S. Wales. Head of the Gwydir, *Leichhardt.*

2. **I. leptolepis,** *Benth.* A branching perennial with a hard woody base, with a loose cottony wool, which often disappears by the time of flowering. Leaves linear or lanceolate, very acute, usually rigid and scarcely stem-clasping at the base, flat or with revolute margins. Peduncles longer than in *I. tomentosa*, with fewer smaller leafy bracts. Involucre hemispherical (or, when young, broadly campanulate), with numerous linear rigid bracts, more or less glandular, the inner ones 2 to $2\frac{1}{2}$ lines long, with narrow scarious tips, more prominent than in *I. tomentosa.* Florets very numerous, on a broad flat receptacle, longer than the involucre. Achenes glabrous or very slightly pubescent. Pappus of about 8 to 12 bristles, barbellate from the base, very much shorter than in *I. tomentosa*, although sometimes nearly as long as the corolla.—*Helichrysum leptolepis*, DC. Prod. vi. 194; *I. tomentosa*, var. *glabrata*, Sond. in Linnæa, xxv. 504.

N. Australia. Sturt's Creek, *F. Mueller.*

N. S. Wales. Molle's Plains, *A. Cunningham*; Darling and Murray rivers to the Barrier Range, *Victorian and other Expeditions.*

Victoria. Wimmera, *Dallachy.*
S. Australia. Avoca, Cudnaka, Murray river, *F. Mueller*; in the interior, *M'Dowall Stuart's Expedition.*

3. **I. supina,** *F. Muell. Trans. Vict. Inst.* 1855, 37. A low decumbent or divaricately-branched perennial, glabrous or scabrous-pubescent. Leaves mostly oblong-spathulate, rather thick, either all under ½ in. long or the larger ones ¾ in., narrowed into a short petiole. Peduncles not very long, with a few small distant leafy bracts. Involucre as in *I. leptolepis*, broad with narrow rigid scabrous-pubescent bracts. Florets as in that species, but perhaps 1 or 2 of the outer ones may be more slender and female. Pappus of 20 to 30 very fine capillary bristles, shortly barbellate upwards.

S. Australia. Memory Cove, *R. Brown*; Kangaroo Island, *F. Mueller.*
Tasmania. Kent's group, Bass's Straits, *R. Brown.*

4. **I. tomentosa,** *Sond. and Muell. in Linnæa*, xxv. 504. A branching perennial, erect or decumbent at the base, under 1 ft. high, covered with a loose cottony wool which it rarely loses. Leaves mostly lanceolate, mucronulate, rather flaccid, with recurved margins, dilated and stem-clasping at the base, or a few of the lower ones narrowed into a petiole. Peduncles short, leafy. Involucre narrow-campanulate, usually about 4 lines long, the bracts linear or narrowly linear-lanceolate, woolly, the inner ones with small narrow scarious tips, not radiating. Florets numerous, scarcely exceeding the involucre. Achenes angular, rather long, glabrous or slightly hirsute. Pappus of 10 to 20 capillary bristles, barbellate from the base, and as long as the corolla.—*Helichrysum Sonderi,* F. Muell. in Seem. Journ. Bot. iv. 121.

N. S. Wales. Darling river, *Victorian Expedition, Mrs. Ford.*
S. Australia. Port Lincoln, *R. Brown*; Murray Desert, *F. Mueller*; Flinders Range, *Howitt's Expedition*; Head of the Great Bight, *Delisser.*

5. **I. viscosa,** *Benth. in Hueg. Enum.* 66. An erect, much-branched annual, of 1 to 2 ft., with a hard stem, more or less hoary-pubescent with a mixture of glandular hairs. Leaves linear or lanceolate, the lower ones contracted into a long petiole, those under the main branches often stem-clasping or shortly decurrent. Flower-heads solitary, terminating numerous peduncles or leafless branches. Involucre broadly ovoid, 3 to 4 lines long, the bracts narrow-linear, herbaceous, glandular-pubescent, with very narrow scarious margins and small white spreading laminæ, a few of the outer ones shorter, without scarious margins or tips. Florets very numerous, all hermaphrodite. Achenes nearly terete, very shortly hirsute. Pappus of 15 to 20 or more capillary bristles, very shortly and finely barbellate.—DC. Prod. vi. 162; Steetz in Pl. Preiss. i. 458; *Helichrysum asteroides*, DC. Prod. vi. 194.

W. Australia. King George's Sound, and adjoining districts, *R. Brown, A. Cunningham, Huegel, Drummond, n.* 174, *Preiss, n.* 120; eastward to Cape Arid, *Maxwell.*

70. ATHRIXIA, Ker.

(Asteridia, *Lindl.*; Chrysodiscus, *Steetz*; Trichostegia, *Turcz.*)

Involucre broadly campanulate or hemispherical, the bracts numerous, very narrow-linear with subulate tips, or almost filiform. Receptacle flat, with-

out scales. Florets of the circumference in a single row (sometimes very few), female ligulate, irregular, or, if tubular, usually longer than the others; disk-florets numerous, hermaphrodite, tubular, 5-toothed. Anthers with fine tails. Style-branches cylindrical truncate or very obtuse. Pappus of capillary bristles, either minutely barbellate or more frequently plumose in the upper part.—Herbs, either annual or perennial. Leaves alternate, entire. Flower-heads on terminal peduncles, the ray-florets usually white.

Besides the Australian species, which are endemic, there are six from S. Africa, the commonest of which, *A. capensis*, is nearly allied to the Australian *A. australis*. The genus is readily known by its involucre, different from that of all other *Helichryseæ*, although approaching that of *Ixiolæna*. From the latter genus it differs chiefly in the female florets either ligulate or enlarged, as in *Podolepis*.

Florets of the circumference ligulate.
  Pappus-bristles barbellate only or denticulate . . . . 1. *A. australis.*
  Pappus-bristles elegantly plumose in the upper half.
    Involucre ¼ in. diameter, glandular-hirsute . . . . 2. *A. gracilis.*
    Involucre ½ in. diameter or more, very woolly . . . . 3. *A. multiceps.*
Florets of the circumference few, tubular, irregular or filiform. Pappus-bristles plumose in the upper half.
  Stems leafy, cottony-white . . . . 4. *A. stricta.*
  Stems very short, procumbent with long slender leafless peduncles . . . 5. *A. tenella.*

1. **A. australis,** *Steetz in Pl. Preiss.* i. 482. An erect corymbosely branched annual, attaining 1 ft. or rather more, sprinkled with white septate hairs. Leaves linear or linear-lanceolate, stem-clasping at the base, mostly above 1 in. long. Flower-heads rather large, few, in a loose terminal corymb. Involucre about 4 lines long, glandular-pubescent or hirsute, the bracts very numerous but in few rows, ending in hair-like glabrous points, few of the innermost broader and ciliate at the end. Ray-florets 12 to 20, with white spreading 3-toothed ligulæ of 4 to 5 lines. Achenes short, glabrous or slightly glandular-papillose. Pappus of about 10 to 12 bristles, as long as the corolla, barbellate but scarcely plumose.—*Asteridia pulverulenta*, Lindl. Swan Riv. App. 24.

W. Australia. Princess Royal Harbour, *R. Brown*; Swan River, *Drummond*, 1st *Coll.*, *Fraser*, *Preiss*, *n.* 65; Geographe Bay and Blackwood river, *Oldfield*; inland from Cape Le Grand, *Maxwell*.—The species is nearly allied to the S. African *A. capensis*.

2. **A. gracilis,** *Benth.* A slender annual, slightly woolly-pubescent or nearly glabrous. Leaves linear or linear-lanceolate. Flower-heads much smaller than in the other radiate species. Involucre broadly ovoid rather than hemispherical, glandular-hispid, about 3 lines long, the bracts linear, the outer ones finer and shorter, the innermost with tufts of fine hairs at the end. Ray-florets not numerous, with ligulæ of about 3 lines. Pappus of about 3 to 6 bristles, elegantly plumose in the upper half.—*Asteridia gracilis*, A. Gray in Hook. Kew Journ. iv. 274.

W. Australia, *Drummond.*

3. **A. multiceps** *Benth.* Stems numerous, 3 to 6 in. high, rather stout for their size, with scaly hairs mixed with a white cottony wool. Radical leaves oblong-spathulate, the others linear-oblong or lanceolate, obtuse, mostly above 1 in. long. Flower-heads rather large, few but corymbose. Involucre

hemispherical, ½ to ¾ in. diameter, the bracts all subulate and woolly-ciliate. Ray-florets numerous, with ligulæ of 3 to 6 lines. Achenes longer than in *A. australis*. Pappus of 8 to 10 bristles, elegantly plumose in the upper part.—*Asteridia multiceps*, A. Gray in Hook. Kew Journ. iv. 274; *Trichostegia asteroides*, Turcz. in Bull. Mosc. 1851, ii. 81.

W. Australia, *Drummond, 5th Coll. Suppl. n.* 66.

Var. *tenella*. More slender and less branched. Ray-florets narrow and more deeply 3-toothed.—Galesbrook and banks of Salt river, *Maxwell*.

4. **A. stricta,** *Benth.* In the original form apparently annual or biennial with rigid, erect, simple or sparingly branched stems of ¾ to 1½ ft., very white with a close cottony wool. Radical leaves petiolate and oblong; stem leaves few, small, narrow-linear, becoming glabrous on the upper side. Flower-heads terminal. Involucre hemispherical, ½ to ¾ in. diameter, the bracts very numerous, narrow-linear, woolly ciliate, the outer ones glandular, the inner ones with small coloured tips. Florets of the circumference female, not numerous, scarcely longer than those of the disk, with an oblique limb, but without any distinct ligula. Disk-florets very numerous. Pappus of 3 to 6 white bristles, elegantly plumose towards the end.—*Asteridia stricta*, A. Gray in Hook. Kew Journ. iv. 275; *Chrysodiscus niveus*, Steetz in Pl. Preiss. i. 460.

W. Australia. King George's Sound and adjoining districts, *Drummond, n.* 32, 90, *Preiss, n.* 69, *Roe, Oldfield*, and eastward to Lucky Bay, *Maxwell*.

Var. *suffruticosa*. A decumbent or divaricately branched undershrub, with the white cottony branches of the original form, as well as the other characters, except that the involucres are smaller and less woolly.—Lucky Bay, *R. Brown*; Esperance Bay and far to the eastward, *Maxwell*.

5. **A. tenella,** *Benth.* A small branching annual, scarcely 2 in. without the peduncles, more or less woolly or at length nearly glabrous. Leaves linear or lanceolate. Peduncles filiform, rigid, glabrous and leafless, often 3 to 4 in. long. Involucres hemispherical, 3 to 4 lines diameter, the bracts linear, almost filiform, plumose-ciliate, the inner ones ciliate towards the end only, with small glabrous coloured tips. Florets very numerous, longer than the involucre, a few of the outer ones female, but not ligulate nor longer than the others. Achenes narrow, contracted under the pappus. Pappus of 3 or 4 bristles, shorter than the corolla and plumose towards the end.—*Panætia athrixioides*, Sond. and Muell. in Linnæa, xxv. 506.

Victoria. Wimmera, *Dallachy*.

S. Australia. Murray river near Moorundee, Crystal Brook, and Lake Lalbert, *F. Mueller*; Port Lincoln, *Wilhelmi*; Venus and Streaky bays, *Babbage*.

W. Australia, *Roe*; Murchison river, *Oldfield*.

71. PODOTHECA, Cass.

(Podospermum, *Labill.*; Phænopoda, *Cass.*; Lophoclinium, *Endl.*)

Involucre cylindrical conical or campanulate, the bracts imbricate, herbaceous, often very thin but not scarious, except the innermost linear ones. Receptacle without scales, but retaining the persistent stalks of the achenes. Florets all hermaphrodite, tubular, 5-toothed. Anthers with very fine tails,

sometimes scarcely perceptible. Style-branches filiform, truncate or capitate at the end. Achenes angular or terete, very shortly stipitate. Pappus of rigid sometimes almost scale-like bristles, more or less ciliate or plumose and often united at the base.—Erect annuals, glabrous or scabrous-pubescent, not woolly or rarely the involucre very slightly so. Leaves alternate, entire. Flower-heads rather large, sometimes very long, on terminal peduncles, usually dilated under the involucre.

The genus is limited to Australia, differing from *Helipterum* chiefly in the stipitate achenes, and generally in the involucre, which however is less foliaceous in *P. fuscescens* than in the other species.

Involucre narrow, cylindrical or conical.
  Involucre 1 to 1½ in. long.
    Florets considerably longer than the involucre . . . . . 1. *P. gnaphalioides.*
    Florets scarcely exceeding the very narrow involucre . . . 2. *P. angustifolia.*
  Involucre about ½ in. long . . . . 3. *P. pygmæa.*
Involucre turbinate-campanulate, rather broad.
  Pappus-bristles barbellate or shortly and regularly plumose, much longer than the achenes . . . . 4. *P. chrysantha.*
  Pappus-bristles very plumose at the base, scarcely longer than the densely hairy achenes . . . . 5. *P. fuscescens.*

1. **P. gnaphalioides,** *Grah. in Bot. Mag. t.* 3920. An annual of 1 to 1½ ft., with few erect branches, glabrous or sprinkled with a few short hairs. Leaves linear or lanceolate, the lower ones narrowed below the middle, all stem-clasping and sometimes shortly decurrent. Peduncles long, dilated and hollow under the head. Involucre cylindrical or narrow-conical, 1 to 1½ in. long, the bracts broadly lanceolate and herbaceous, the innermost narrow-linear, paleaceous and very acute. Florets very slender, considerably longer than the involucre and pappus. Achenes silky-hairy. Pappus of 4 to 6, usually 5, flattened plumose bristles, united in a cylinder at the base.—Steetz in Pl. Preiss. i. 449; *Lophoclinium citrinum*, Endl. in Bot. Zeit. 1843, 457.

W. Australia, *Drummond, 5th Coll. Suppl. n.* 63; Swan River, *Collie;* Lake Mathilda, *Preiss, n.* 107; Kalgan and Murchison rivers, *Oldfield;* Salt river, *Maxwell.*

2. **P. angustifolia,** *Cass.; DC. Prod.* vi. 159. An erect scabrous-pubescent or nearly glabrous annual, usually branching from the base, rarely above 1 ft. high and often under 6 in. Leaves narrow-linear. Peduncles short, dilated and hollow under the head. Involucre narrow-cylindrical or slightly conical, 1 to 1½ in. long, the bracts herbaceous, linear or linear-lanceolate, acuminate, the innermost linear and scarious. Florets very slightly exceeding the involucre, filiform and much more slender than in *P. gnaphalioides.* Achenes and pappus as in that species, but more slender.—Steetz in Pl. Preiss. i. 448; *Podosperma angustifolia*, Labill. Pl. Nov. Holl. ii. 35. t. 177; *Phænopoda angustifolia*, Cass. (DC.); *Lophoclinium Manglesii*, Endl. in Bot. Zeit. 1843, 457.

Victoria. Near Melbourne, *Harvey;* Wimmera, *Dallachy;* Portland, *F. Mueller.*
S. Australia. Murray river and Encounter Bay, *F. Mueller;* near Adelaide, *Whittaker.*
W. Australia. King George's Sound, *R. Brown* and others; Rottenest Island, *Preiss, n.* 106, also *Drummond, n.* 48, 49, *5th Coll. n.* 319, 320 (the latter specimens only 2 or 3 in. high, including the involucre).

3. **P. pygmæa,** *A. Gray in Hook. Kew Journ.* iv. 227. A little annual, not 2 in. high in our specimens. Leaves linear, glabrous. Involucre cylindrical or conical, but only about ½ in. long and nearly 3 lines diameter at the base, the outer bracts broadly lanceolate and not so acute as in the preceding species, thus connecting them with the following ones. Florets slender, scarcely exceeding the involucre. Pappus-bristles few, plumose, free or slightly united at the base.

W. Australia, *Drummond, 5th Coll. Suppl. n.* 64.

4. **P. chrysantha,** *Benth.* An erect annual, simple or slightly branched, glabrous or scabrous-pubescent, rarely above 1 ft. high. Leaves linear. Peduncles rather long, dilated and hollow under the head. Involucre broadly turbinate-campanulate, 6 to 8 lines long, the bracts thinly herbaceous, broadly lanceolate or ovate-lanceolate, not numerous, and only 2 or 3 outer ones shorter than the others, the innermost linear and scarious. Florets numerous, exceeding the involucre. Achenes hairy. Pappus of 8 to 10 barbellate, but scarcely plumose bristles.—*Leiolæna chrysantha*, Steetz in Pl. Preiss. i. 459.

W. Australia. Swan River, *Drummond, 1st Coll., Preiss, n.* 105, *Oldfield*; Murchison river, *Oldfield, Drummond, 6th Coll. n.* 148.

5. **P. fuscescens,** *Benth.* A slender annual, our specimens not above 6 in. high and glabrous or nearly so. Leaves small, the lower ones oblong or lanceolate and opposite, the upper ones alternate lanceolate and broader, passing into a few leafy bracts upon the somewhat dilated peduncle close under the flower-head. Involucre campanulate, about ½ in. diameter, the bracts not numerous, of nearly equal length, the outer ones herbaceous though thin, the inner more scarious, with small scarious tips. Florets slender, all hermaphrodite, but the inner ones often sterile, their stalks rather more prominent than those of the outer florets, and irregularly cohering so as to give the receptacle almost a conical form. Achenes, when perfect, densely villous. Pappus of 10 to 15 rigid bristles, plumose especially at the base, less so towards the end.—*Helipterum fuscescens*, Turcz. in Bull. Mosc. 1851, ii. 80; *Acroclinium phyllocephalum*, A. Gray in Hook. Kew Journ. iv. 271.

W. Australia, *Drummond, 5th Coll. Suppl. n.* 64.

Lophoclinium album, Endl. in Bot. Zeit. 1843, 457, may very probably be this species.

72. PODOLEPIS, Labill.

(Scalia, *Sims*: Panætia, *Cass.*: Scaliopsis, *Walp.*; Siemssenia, *Steetz*; Stylolepis, *Lehm.*; Rutidochlamys, *Sond.*)

Involucre hemispherical or rarely ovoid, the bracts imbricate, in several rows, with very thin scarious laminæ, not radiating, the outer ones sessile, the inner ones on rigid or scarious stalks or claws. Receptacle flat, without scales. Florets of the circumference few or numerous, in a single row, female, either ligulate or irregular or with fewer lobes than the disk-florets, which are hermaphrodite, tubular, with 5 or rarely 4 narrow lobes, sometimes slightly irregular. Anthers with fine tails, sometimes very short. Style-branches filiform, truncate or capitate. Achenes nearly terete or slightly compressed,

not beaked, glabrous or papillose. Pappus of capillary bristles, simple or shortly barbellate, often slightly united at the base.—Annual or perennial herbs, the cottony wool usually very deciduous, leaving the stem and leaves glabrous and smooth. Leaves alternate, lanceolate or linear, very frequently stem-clasping. Flower-heads terminal, pedunculate or rarely sessile, the ray-florets yellow pink or purple, the scarious laminæ of the involucral bracts imbricate so as to conceal the claws, in all except *P. longipedata.*

The genus is limited to Australia. It is allied to *Athrixia* through those species where the female florets are ligulate, but differs in the involucre; where the female florets are less developed it passes almost into *Helichrysum*, differing chiefly in the very thinly scarious, not opaque or petal-like laminæ of the involucral bracts. A nearly similar involucre occurs in some species of *Helipterum*, but with a plumose pappus.

Involucres ovoid, almost sessile in clusters . . . . 1. *P. rutidochlamys.*
Involucres hemispherical, pedunculate or rarely here and there almost sessile, ½ to 1½ in. diameter (or only 4 lines in *P. Lessoni*).
Laminæ of the intermediate involucral bracts much shorter than their claws, obtuse or almost acute . . . . 2. *P. longipedata.*
Laminæ of the intermediate involucral bracts as long as or longer than their claws and concealing them.
Laminæ very acute or acuminate. Ray-florets yellow, 3- or 4-lobed.
Perennial. Flower-heads large. Eastern species . . . 3. *P. acuminata.*
Annuals. Involucres under 1 in. diameter.
Eastern species. Involucral bracts acute, smooth or slightly rugose . . . . 4. *P. canescens.*
Western species. Involucral bracts very acuminate, smooth . . . . 5. *P. aristata.*
Western species. Involucral bracts acute, very rugose . 6. *P. pallida.*
Laminæ obtuse or scarcely acute. Ray-florets purple, ligulate, entire.
Claws of the involucral bracts glabrous. Pappus usually thickened upwards . . . . 7. *P. nutans.*
Claws of the involucral bracts glandular. Pappus not thickened upwards . . . . 8. *P. gracilis.*
Laminæ of the involucral bracts obtuse. Ray-florets 3- or 4-lobed.
Ray-florets yellow. Perennial. Involucre 1 to 1½ in. diameter; bracts very rugose . . . . 9. *P. rugata.*
Ray-florets pink, small. Annual. Involucre under ½ in. diameter; bracts smooth . . . . 10. *P. Lessoni.*
Involucres not 3 lines diameter, turbinate or at length hemispherical. Slender annuals. Ray-florets irregular, not much longer than those of the disk.
Involucres turbinate, rather narrow . . . . 11. *P. Siemssenia.*
Involucres at length hemispherical . . . . 12. *P. microcephala.*

1. **P. rutidochlamys,** *F. Muell. Fragm.* iv. 79. An erect branching annual of 2 or 3 ft., with more or less of a loose deciduous wool. Leaves lanceolate or ovate-lanceolate, stem-clasping with rounded auricles and often slightly decurrent. Flower-heads nearly sessile and more or less clustered at the ends of the slender branches of a loose panicle. Involucre ovoid, 4 to 5 lines long, the laminæ of the bracts imbricate, lanceolate, acuminate, transversely rugose, decurrent along the claws. Female florets very few, not longer than the others, but more slender and only 3-lobed. Pappus-bristles

rather numerous, scabrous or minutely barbellate.—*Rutidosis arachnoidea*, Hook. in Mitch. Trop. Austr. 341; *Rutidochlamys Mitchelli*, Sond. in Linnaea, xxv. 497.

Queensland. Shoalwater Bay, *R. Brown*; Upper Burdekin and Burnett rivers, *F. Mueller*; Port Curtis, *M'Gillivray*; Emu Creek, *Thozet*; near Mount Pluto, *Mitchell*.
N. S. Wales. Liverpool Plains, *C. Moore*; Darling river, *Neilson*; Murray river, *F. Mueller*; also in *Leichhardt's Collection*.

2. **P. longipedata,** *A. Cunn. in DC. Prod.* vi. 163. Either annual or with a perennial stock and annual stem of 1 to 2 ft., simple or divaricately-branched and retaining very little cottony wool. Leaves linear or lanceolate or the radical ones oblong-spathulate. Flower-heads smaller than in *P. acuminata*, pedunculate or rarely 3 or 4 together almost sessile. Involucres hemispherical, about $\frac{3}{4}$ in. or rarely nearly 1 in. diameter, the scarious laminæ of the bracts smaller than in all the allied species, ovate, obtuse or acute, not rugose, those of the intermediate bracts much shorter than their rather broad claws, a few of the outer bracts entirely scarious. Ray-florets as in *P. acuminata*, yellow, longer than the others, ligulate or irregular, 3- or 4-lobed. Pappus-bristles numerous, scarcely barbellate.—*P. Mitchelli*, Sond. in Linnaea, xxv. 508; *P. hieracioides*, F. Muell. Fragm. i. 112; *Scaleopsis Lucæana*, Walp. in Linnæa, xiv. 318.

N. Australia. Mackenzie river, *F. Mueller*.
Queensland. Shoalwater Bay and Broad Sound, *R. Brown*; sandy shores of Moreton Bay, *A. Cunningham*; Maranoa river, *Mitchell*.
N. S. Wales. Hunter's River, *R. Brown*; near Bathurst, *A. Cunningham*; also in *Leichhardt's Collection*.
Victoria. Grassy valleys, Delatite, Mitta-Mitta, Macalister, Omeo, Snowy rivers, *F. Mueller*; Maneroo, *Lhotzky*.

The Northern specimens generally have an annual appearance, with smaller flower-heads, than the Southern ones, which have sometimes several stems from a hard stock, but Brown's specimens quite connect the two forms.

3. **P. acuminata,** *R. Br. in Ait. Hort. Kew. ed.* 2. v. 82. Stems from a perennial stock erect, 1 to 2 ft. high, simple or corymbosely branched, glabrous or with a few scattered short hairs and sometimes a little deciduous wool about the base. Radical and lower leaves petiolate, oblong or lanceolate, often several in. long, the upper ones few, lanceolate or linear, stem-clasping or rarely slightly decurrent. Flower-heads large, yellow, pedunculate. Involucre hemispherical, 1 to $1\frac{1}{2}$ in. diameter, the scarious laminæ of the bracts acute or acuminate, smooth and not rugose, the inner ones on long linear claws. Florets all longer than the involucre, those of the ray longer than the others, the limb ligulate or irregularly tubular, deeply 3- to 5-lobed. Pappus-bristles numerous, white, shortly barbellate, united at the base.—DC. Prod. vi. 162; Hook. f. Fl. Tasm. i. 209; *Scalia jacœoides*, Sims, Bot. Mag. t. 956.

Queensland. Burnet river and Peak Downs, *F. Mueller*; Rockhampton, *Dallachy*; Maranoa river and Mantuan Downs, *Mitchell*.
N. S. Wales. Port Jackson, *R. Brown*; New England, *C. Stuart*; Hastings river, *Beckler*; Richmond river, *Fawcett*, Nangas, *Backhouse*; Darling river, *Victorian Expedition*.
Victoria. Yarra river, Avoca river, Cobberas mountains, *F. Mueller*; Creswick,

Whan; Wimmera, *Dallachy;* Haidinger range at an elevation of 5000 feet (the laminæ of the involucral bracts almost obtuse), *F. Mueller.*

Tasmania. Port Dalrymple, *R. Brown;* abundant in many parts of the colony, ascending to 4000 feet, *J. D. Hooker.*

S. Australia. Holdfast Bay, Mount Gambier, *F. Mueller.*

The Northern specimens have usually smaller flower heads than the Southern ones.

4. **P. canescens,** *A. Cunn. in DC. Prod.* vi. 163. An annual with erect or ascending branching stems, rarely much exceeding 1 ft. Leaves linear or lanceolate, chiefly at the base of the stem, 1 to 2 in. long or even more, stem-clasping and sometimes shortly decurrent, the upper ones small and distant. Flower-heads rather small, on slender peduncles. Involucre hemispherical, 6 to 8 lines diameter, the scarious laminæ of the bracts acute or acuminate, smooth or slightly rugose, their claws with broad scarious margins. Florets yellow, the outer ones slightly exceeding the others, irregularly 3- or 4-lobed, ligulate or almost 2-lipped.—*P. inundata,* A. Cunn. in DC. Prod. vi. 163; *P. affinis,* Sond. in Linnæa, xxv. 507.

N. S. Wales. Inundated banks of Lachlan river and exposed rocky situations near Croker's Range, *A. Cunningham,* Darling and Murray rivers and Mount Goningberi, *Victorian Expedition.*

Victoria. Wimmera, *Dallachy.*

S. Australia. From the Murray to St. Vincent's and Spencer's Gulfs, *F. Mueller, Wilhelmi,* and others.

5. **P. aristata,** *Benth. in Hueg. Enum.* 61. An erect annual, often exceeding 1 ft., glabrous or slightly woolly. Leaves linear or lanceolate, stem-clasping and often decurrent. Flower-heads usually corymbose, the peduncles rather short. Involucre hemispherical, ½ to ¾ in. diameter, the bracts numerous, their laminæ smooth, acute, and ending usually in a rigid point or awn, the claws of the inner ones narrow and glandular. Ray-florets yellow, longer than the others, irregularly tubular, 3- or 4-lobed. Pappus-bristles scarcely cohering at the base.—DC. Prod. vi. 163; Steetz in Pl. Preiss. i. 166; *P. chrysantha,* Endl. in Bot. Zeit. 1843, 458; Rev. Hortic. 1857, 263, with a figure.

W. Australia. Swan River, *Fraser, Huegel, Drummond, 1st Coll.,* Blackwood river, *Oldfield;* between Moore and Murchison rivers, *Drummond, 6th Coll. n.* 154; also *5th Coll. n.* 328.

Var. *minor.* Flower-heads smaller in all their parts. Ray-florets shortly toothed.—*P. subulata,* Steetz in Pl. Preiss. i. 165.—Vasse river, *Preiss, n.* 54; between Moore and Murchison rivers, *Drummond, 6th Coll. n.* 155.

6. **P. pallida,** *Turcz. in Bull. Mosc.* 1851, ii. 78. An erect annual, more or less woolly-pubescent, evidently very nearly allied to *P. aristata,* with the same linear or lanceolate leaves and inflorescence. Flower-heads rather larger, the laminæ of the involucral bracts large, ovate-lanceolate, acute or acuminate, and all very conspicuously transversely wrinkled as in *P. rugata.* Ray-florets very numerous (yellow?), with 3 or 4 narrow lobes.

W. Australia, *Drummond, 5th Coll. n.* 387.

7. **P. nutans,** *Steetz in Pl. Preiss.* i. 164. An erect paniculately branched annual, usually under 1 ft., closely resembling *P. gracilis.* It

retains more of the cottony wool, the flower-heads are rather smaller, the laminæ of the involucral bracts larger in proportion and the claws of the inner ones quite smooth, not glandular. Ray-florets as in *P. gracilis* ligulate, entire, and apparently purple or pink. Pappus-bristles usually, but not always, slightly thickened upwards.

W. Australia. King George's Sound, *R. Brown, A. Cunningham;* and thence to Swan River, *Drummond, Preiss, n.* 58.

I do not observe anything in the specimens likely to have given rise to Steetz's name. *P. rosea,* Steetz in Pl. Preiss. i. 463, from Preiss's specimens from Swan River, n. 53 and 61, appears to me to be the same species, which should probably be included as a variety in *R. gracilis.*

8. **P. gracilis,** *Grah. in Edinb. New Phil. Journ.* v. 379. An erect, glabrous, paniculately-branched annual, often exceeding 1 ft. Leaves linear or lanceolate, stem-clasping and often shortly decurrent. Peduncles usually rather long. Involucres hemispherical, when fully out ½ to ¾ in. diameter, the bracts numerous, their laminæ broad, obtuse, smooth, the lower sessile ones often descending on the peduncle, the claws of the inner ones narrow, glandular. Ray-florets numerous, ligulate, rather long, entire and truncate, purple or lilac. Pappus of about 15 to 20 capillary bristles, not thickened upwards, quite free or scarcely cohering at the base.—DC. Prod. vi. 163; Bot. Mag. t. 2904; Sweet, Brit. Fl. Gard. t. 285; Steetz in Pl. Preiss. i. 463; *Stylolepis gracilis*, Lehm. in Linnæa, v. 385.

W. Australia. Swan River, *Preiss, n.* 51, 56; *Drummond, 5th Coll. n.* 327; Tone river, *Maxwell;* Murchison river, *Oldfield.*

P. filiformis, Steetz in Pl. Preiss. i. 465, from Woodman's Point, *Preiss, n.* 57, appears to be a slender starved state of *P. gracilis.* *P. auriculata,* DC. Prod. vi. 162, from Sharks' Bay, *Gaudichaud,* which I have not seen, may be a variety of *P. gracilis,* with transversely rugose involucral bracts, or perhaps the same as *P. pallida.*

9. **P. rugata,** *Labill. Pl. Nov. Holl.* ii. 57. *t.* 208. A rather stout perennial, with the habit of *P. acuminata,* but usually retaining more of a white loose or close cottony wool. Leaves oblong, lanceolate or linear, the lower ones petiolate and several inches long, the upper ones small narrow and stem-clasping, degenerating into scarious scales on the peduncles. Flower-heads at least as large as in *P. acuminata,* and the florets as in that species yellow, those of the ray larger, ligulate or irregular, 3- or 4-lobed. Involucres 1 to 1½ in. diameter, the large scarious laminæ of the bracts obtuse and always transversely wrinkled.—DC. Prod. vi. 162; Steetz in Pl. Preiss. i. 462; Regel, Gartenfl. t. 320.

Victoria. Wimmera, *Dallachy;* mouth of the Glenelg river, *F. Mueller, Allitt.*

S. Australia. Grassy plains, etc., around St. Vincent's and Spencer's gulfs, *F. Mueller, Whittaker,* and other.

W. Australia. King George's Sound and neighbouring districts, *R. Brown, Labillardière, Drummond, 4th Coll. n.* 179, *5th Coll. n.* 388, *Preiss, n.* 50, and others; eastward to Cape Arid, *Maxwell.*

10. **P. Lessoni,** *Benth.* A slender erect branching annual of ½ to 1 ft., loosely woolly or at length glabrous. Leaves small, from ovate to lanceolate, stem-clasping and sometimes slightly decurrent. Peduncles filiform. Involucres hemispherical, about 4 lines diameter, the very numerous imbricate thinly scarious bracts broadly ovate, obtuse or almost acute, ciliate, the claws

of the inner ones linear, not at all or scarcely glandular. Florets all nearly equal and longer than the involucre with narrow lobes, the outer female ones more slender, irregularly 3- or 4-lobed. Pappus of few capillary bristles, barbellate towards the end, usually reduced in the achenes of the ray to a single bristle or entirely wanting.—*Panætia Lessonii*, Cass.; DC. Prod. vi. 162; Steetz in Pl. Preiss. i. 461; *Panætia Muelleri*, Sond. in Linnaea, xxv. 505; *Podolepis Gilberti*, Turcz. in Bull. Mosc. 1851, i. 195.

N. S. Wales. Darling river, *Herb. F. Mueller.*

S. Australia. Flinders Range, St. Vincent's Gulf, *F. Mueller.*

W. Australia. King George's Sound, *Menzies*, *Preiss*, *n.* 59, and thence to Swan River, *Drummond*, *1st Coll. and n.* 329, 330; *5th Coll. n.* 353, *Oldfield*, and others. Champion Bay, *Oldfield.*

11. **P. Siemssenia,** *F. Muell. Herb.* A slender glabrous much-branched annual of ½ to 1 ft. Leaves linear. Flower-heads small, on filiform peduncles. Involucre turbinate, about 3 lines long, the scarious laminæ of the bracts oblong, imbricate, the outer ones short. Ray-florets 3- or 4-lobed, ligulate or irregular, exceeding the longest involucral bracts: disk-florets with 5 narrow lobes but often slit on one side nearly to the base. Pappus-bristles not numerous, exceedingly fine, not perceptibly barbellate, shorter than the corolla.—*Siemssenia capillaris*, Steetz in Pl. Preiss. i. 467.

N. S. Wales. Darling river, *Victorian Expedition*; Stokes's Range to Cooper's Creek, *Wheeler*; Murrumbidgee and Murray rivers, *F. Mueller.*

Victoria. Wimmera, *Dallachy.*

S. Australia. Cudnaka, Spencer's Gulf, *F. Mueller.*

W. Australia, *Preiss*, *n.* 72; *Drummond*, *n.* 167; Port Gregory, *Oldfield.*

12. **P. microcephala,** *Benth.* Slender, erect, much-branched and perfectly glabrous, the stem hard but probably annual, our specimens not above 6 in. high. Leaves narrow-linear, obtuse. Peduncles slender, with a few very short scale-like but not scarious bracts. Involucres broadly turbinate, at length hemispherical, scarcely exceeding 2 lines diameter, the bracts less scarious than in the other species, obtuse, glandular, the inner ones with small scarious laminæ. Florets shortly exceeding the involucre, all with 5 narrow lobes, those of the circumference more deeply and irregularly slit than the inner ones and often rather larger. Pappus-bristles few, very fine, shortly barbellate.

W. Australia. Sharks' Bay, *Milne.*

73. LEPTORHYNCHUS, Less.

(Rhytidanthe, *Benth.*)

Involucre broadly turbinate, campanulate or hemispherical, the bracts much imbricate in several rows, the short outer ones and the tips or laminæ of the others very thinly scarious and not spreading. Receptacle flat, without scales. Florets all tubular, a few in the circumference usually female, more slender but not longer than the others, 3- or 4-toothed; disk-florets hermaphrodite, 5-toothed. Anthers with fine tails. Style-branches nearly terete, truncate. Achenes small or narrow, somewhat compressed, glabrous or papillose, contracted at the top or produced into a short beak. Pappus of several capillary bristles, scabrous, shortly barbellate or almost plumose towards the end.—Annual or perennial herbs or undershrubs, more or less cottony or glandular-pubescent. Leaves alternate, entire. Flower-heads pedunculate, the outer scarious involucral bracts often descending along the peduncle. Florets almost always longer than the involucre.

The genus is limited to Australia. It is scarcely distinct from *Helichrysum*, differing in the involucral bracts with more thinly scarious tips, neither spreading nor petal-like nor opaque, and in the contraction of the achene at the top, which can in some species be only seen at maturity, and then not always very decided. From *Waitzia*, *Leptorhynchus* differs in the involucre and usually in the shorter beak to the achene. The florets, as in *Ixiolæna* and *Podolepis*, are usually longer in proportion to the involucre than in *Helichrysum* or *Helipterum*.

Achenes contracted at the top, but not distinctly beaked. Perennials or undershrubs.
Pappus-bristles equally and minutely denticulate.
Outer involucral bracts very thinly scarious, passing into the scarious scales of the peduncle . . . . 1. *L. squamatus.*
Outer involucral bracts with thinly scarious woolly-ciliate margins and dark centres . . . . 2. *L. panætioides.*
Pappus-bristles more barbellate or almost plumose towards the end.
Outer involucral bracts with dark tips and woolly scarious margins, passing into numerous scales on the peduncle . . . . 3. *L. tenuifolius.*
Involucral bracts wholly scarious, with woolly-ciliate margins, abruptly distinct from the few leafy bracts on the peduncle . . 4. *L. ambiguus.*
Achenes more distinctly though sometimes shortly beaked. Annual, except *L. linearis.*
Involucral bracts narrow, acute.
Involucral bracts small, very numerous, all ciliate with long hairs. Flower-heads 2 to 3 lines long . . . . 5. *L. pulchellus.*
Outer involucral bracts very thin and transparent, inner ones with rigid glandular centres. Flower-heads 5 to 6 lines long . 6. *L. elongatus.*
Involucral bracts broad, obtuse.
Annual. Involucral bracts ciliate . . . . 7. *L. Waitzia.*
Rhizome creeping. Involucral bracts not ciliate, the scarious tips broad and almost spreading . . . . 8. *L. linearis.*

1. **L. squamatus,** *Less. Syn. Comp.* 273. A perennial with decumbent or ascending stems from 6 in. to 1 foot long, with a little deciduous cottony wool on the young parts and the under side of the leaves. Leaves lanceolate or linear, mucronate-acute, narrowed at the base, flat or with recurved margins, glabrous above, the longest above 1 in. long, the lowest much shorter. Peduncles long with distant scarious scales passing into the involucral bracts. Involucre broadly turbinate or almost hemispherical, not ½ in. diameter, the bracts imbricate in numerous rows, oblong-lanceolate, scarious with woolly-ciliate margins and small coloured but not spreading glabrous tips, the innermost narrow and 3 lines long, the others gradually shorter. Florets longer than the involucre, a very few of the outer ones more slender, female 3- or 4-toothed. Achenes very shortly contracted at the top. Pappus-bristles cohering in a ring at the base, shortly barbellate, those of the female florets few.—DC. Prod. vi. 160; Hook. f. Fl. Tasm. i. 208; F. Muell. Fragm. i. 52; *Chrysocoma squamata*, Labill. Pl. Nov. Holl. ii. 40. t. 184; *Helichrysum dubium*, Cass. (DC.); *Leptorhynchus hemisphæricus*, DC. Prod. vi. 160; *L. gracilis* and *L. Lhotzkyanus*, Walp. in Linnæa, xiv. 317, and probably also *L. nitidulus*, DC. Prod. vi. 160.

N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown* and others; Bathurst plains, *Fraser*; New England, *C. Stuart.*
Victoria. From the Glenelg to Gipps' Land, very common, *Robertson*, *F. Mueller*, and others; Wimmera, *Dallachy.*
Tasmania. Abundant throughout the colony, *J. D. Hooker.*
S. Australia. Port Adelaide, *Blandowski*; Kensington, *F. Mueller.*

2. **L. panætioides,** *Benth.* Erect, woolly-tomentose, attaining 1 ft. or even more, with a hard base and sometimes evidently suffruticose. Leaves linear, acute but soft and cottony. Peduncles long, slender, leafless, except a few minute linear bracts. Involucre hemispherical, 3 to 4 lines diameter, the bracts imbricate in many rows, narrow with scarious woolly-ciliate margins and very small not spreading glabrous tips. Florets longer than the involucre, a few of the outer ones female and 3-lobed with exserted styles. Achenes shortly contracted at the top. Pappus-bristles slightly barbellate. *Helichrysum panætioides*, DC. Prod. vi. 194.

N. S. Wales. Lachlan river and foot of Mount Aiton, *Fraser*, *A. Cunningham*; Murray river, *F. Mueller*; also in *Leichhardt's* collection.
This has something of the habit but not the involucre of *Ixiolæna leptolepis.* It is evidently nearly allied to *Leptorhynchus squamatus*, but more erect and cottony, the peduncles without scarious scales, and the involucres more hemispherical.

3. **L. tenuifolius,** *F. Muell. Fragm.* i. 52. Stock perennial, tufted and more or less woolly, the stems slender, erect, branching, with a little cottony wool about the axils and under side of the leaves. Leaves narrow-linear or subulate, acute, with revolute margins. Peduncles long and filiform. Flower-heads smaller than in *L. squamatus.* Involucre turbinate or at length hemispherical, about 3 lines diameter, the bracts in numerous rows, linear, woolly-ciliate, with very narrow coloured tips. Florets all longer than the involucre, a few of the outer ones female, slender, and usually 4-toothed. Achenes very slightly contracted at the top. Pappus of 5 or 6 capillary bristles, almost plumose towards the end.

Victoria. Open wet forest land, Glenelg river, *Robertson*; common about Melbourne, *Adamson*; Dandenong ranges, Mount M'Ivor, etc., *F. Mueller.*
Some specimens very closely resemble some of those of *L. ambiguus*, but they can always be known by the outer scale-like involucral bracts much narrower and descending along the peduncle as in *L. squamatus.*

4. **L.? ambiguus,** *Benth.* A perennial with erect stems attaining 1 ft. or more, glandular-pubescent, glabrous or with a little cottony wool. Leaves linear or linear-lanceolate, acute, with revolute margins, stem-clasping at the base, the upper ones small and distant. Peduncles with only very small distant leafy bracts. Involucres almost hemispherical, 4 to 5 lines diameter, the scarious bracts numerous, closely imbricate, rather broad, woolly-ciliate, without glabrous tips, the inner ones shortly stipitate. Florets scarcely exceeding the involucre, a few of the outer ones female. Achenes shortly contracted at the top. Pappus of 12 to 20 capillary bristles, barbellate or almost plumose towards the end, few or scarcely any to the achenes of the female florets. *Helichrysum ambiguum*, Turcz. in Bull. Mosc. 1851, i. 195.

W. Australia, *Drummond, n.* 41, *3rd Coll. n.* 121, *4th Coll. n.* 220.
Var *semicalvus.* More woody at the base, the stems more branched and woolly, the

lower leaves narrow-oblong, obtuse or mucronate.—*Helichrysum semicalvum*, F. Muell. Fragm. ii. 156.

N. S. Wales. Darling river, *Panton*; Barrier range, *Victorian Expedition*.

S. Australia. Flinders range, *F. Mueller*; M'Donnel ranges, *M'Douall Stuart*.

The involucre and florets are very nearly those of *L. pulchellus*, but the achenes are not beaked and the characters are nearly those of *Helichrysum*, sect. *Chrysocephalum*; the achenes however (of which I have seen but few ripe) appear to be distinctly contracted at the top.

5. **L. pulchellus,** *F. Muell. Fragm.* i. 53. An erect corymbosely-branched annual, rarely above 6 in. high, the lower part of the stem sometimes hard so as to appear woody. Leaves linear, acute. Flower-heads small and rather numerous on filiform peduncles. Involucre broadly turbinate or almost hemispherical, about 3 lines diameter, the bracts imbricate in many rows, with scarious ciliate margins and very small coloured tips, the inner ones stipitate. Florets longer than the involucre, the outer female ones few and slender. Achenes contracted into a short but distinct beak. Pappus-bristles barbellate from the base, 2 or 3 to the achenes of the female florets, 4 or 5 to the others.—Sond. in Linnæa, xxv. 500; *Doratolepis? tetrachæta*, Schlecht. in Linnæa, xx. 593.

N. S. Wales. Near Bathurst, *Herb. F. Mueller*.

Victoria. Avoca river, *F. Mueller*; Wimmera, *Dallachy*.

S. Australia. Dry places from the Murray river to St. Vincent's and Spencer's gulfs, *F. Mueller* and others.

6. **L. elongatus,** *DC. Prod.* vi. 160. Apparently annual, but often with a hard tufted base, the stems ascending or erect, often exceeding 1 ft., simple or sparingly branched, glabrous or sprinkled with short almost scale-like hairs. Leaves linear or lanceolate or the lower ones linear-spathulate. Flower-heads rather large, the peduncles bearing a few transparent scales passing into the outer involucral bracts. Involucre campanulate, 4 to 5 lines long, the outer bracts narrow-lanceolate, very scarious and transparent, passing into the inner ones with linear glandular claws and small lanceolate scarious tips. Florets longer than the involucre, all hermaphrodite. Achenes contracted into a beak scarcely perceptible at first, but rather long when the achene is ripe. Pappus of numerous fine capillary bristles.—Hook. f. Fl. Tasm. i. 208; Sond. in Linnæa, xxv. 502.

N. S. Wales. Blue Mountains, near Bathurst, *A. Cunningham*; Argyle county, *Backhouse*.

Victoria. Near Melbourne, *F. Mueller*; Glenelg river, *Robertson*; near Skipton, *Whan*; Wimmera, *Dallachy*.

Tasmania. Not uncommon in various parts of the colony, *J. D. Hooker*.

S. Australia. Sturt river, Bugle and Barossa ranges, Tanunda, *F. Mueller*.

Var. *pedunculari*s. Stems more branched and leafy at the base, the upper branches reduced to long peduncles, leafless except the scale-like bracts. *L. medius*, A. Cunn. in DC. Prod. vi. 160; *Rhytidanthe scabra*, Benth. in Hueg. Enum. 63; *Leptorhynchus rhytidanthe*, DC. Prod. vi. 679.

W. Australia. King George's Sound and adjoining districts, *R. Brown*, *A. Cunningham*, and others; *Drummond*, *3rd Coll. n.* 36, *4th Coll. n.* 180; eastward to the Great Bight, *Maxwell*; Murchison river, *Oldfield*.

7. **L. Waitzia,** *Sond. in Linnæa*, xxv. 501. A loosely woolly-pubescent annual, the stems usually erect and under 6 in., rarely attaining nearly 1 ft.

Leaves linear or linear-oblong, obtuse or mucronate, rarely above 1 in. long, scabrous-pubescent, the uppermost on the peduncles often passing into scarious scales. Flower-heads campanulate or almost globular, about ½ in. diameter, the bracts scarious but not transparent, loosely imbricate, oblong, obtuse, shortly ciliate, the innermost row rigid, with a very small lamina. Florets longer than the involucre, all hermaphrodite. Achenes contracted into a rather long beak. Pappus of 12 or more capillary bristles barbellate from the base.

N. S. Wales. Darling river, *Victorian Expedition.*
Victoria. Avoca and Murray rivers, *F. Mueller;* Wimmera, *Dallachy.*
S. Australia. Dry hills, Salt Creek, *Behr;* Gawler town, *F. Mueller.*

8. **L. linearis,** *Less. Syn. Comp.* 273. Rhizome slender and creeping, emitting tufts of erect or ascending stems, simple or sparingly branched, often 1 ft. high, thinly cottony or glabrous. Leaves linear, the radical ones broad and 1 to 2 in. long, the upper ones gradually narrower, smaller, and more distant, usually glabrous on both sides. Flower-heads few or solitary. Involucre broadly hemispherical, ½ to ¾ in. diameter, the bracts oblong-ovate or almost orbicular, not ciliate, with broadly ovate thinly scarious laminæ looser than in any other species. Florets (as far as I have seen) all hermaphrodite, longer than the involucre. Achenes contracted into a short but distinct beak. Pappus of numerous fine bristles shortly barbellate.—DC. Prod. vi. 160.

N. S. Wales. Moist pastures between Sydney and Paramatta, *R. Brown.*
Victoria. Open woods and sandy hills, Latrobe and Snowy rivers, and heathy ridges near Mombaya river, *F. Mueller.*
Tasmania. Derwent river, *R. Brown.*

74. SCHŒNIA, Cass.

Involucre turbinate or campanulate, the outer bracts adpressed, scarious, imbricate, the inner row with petal-like spreading laminæ. Receptacle without scales. Florets all tubular, 5-toothed, those of the circumference hermaphrodite, fertile. Anthers with fine tails. Style-branches terminating in a short cone. Disk-florets sterile, with an undivided style. Achenes of the circumference very flat, not beaked, those of the disk abortive. Pappus of numerous barbellate bristles.—Annual. Leaves alternate or the lower ones opposite, entire. Flower-heads in a loose corymb.

The genus is limited to a single species endemic in Australia. It differs from the section *Lawrencella* of *Helichrysum*, chiefly in the flat achenes of the circumference.

1. **S. Cassiniana,** *Steetz in Pl. Preiss.* i. 481. An erect corymbosely-branched annual of 1 to 2 ft., scabrous-pubescent or with more or less of cottony wool. Leaves lanceolate or linear, or the lower ones oblong-spathulate, the longest above 2 in., the upper ones few and small. Flower-heads in a loose terminal corymb. Involucre varying from 3 to 5 lines long without the ray, the outer scarious bracts usually brown, the radiating laminæ of the inner bracts white or pink, oblong, 4 to 6 lines long. Perfect achenes in a single row at the circumference, flat, with the edges ciliate with long hairs. Sterile florets numerous.—*Helichrysum Cassinianum*, Gaud. in Freyc. Voy. Bot.

466. t. 87; *Helipterum Cassinianum*, DC. Prod. vi. 216; *Schœnia oppositifolia*, Steetz in Pl. Preiss. i. 480; Bot. Mag. t. 4560; *Pteropogon Cassinianus* and *P. oppositifolius*, F. Muell. in Linnæa, xxv. 415.

S. Australia. Finke river, *M'Douall Stuart's Expedition*; in the scrub N.E. of Lake Gairdner, *Herb. F. Mueller.*

W. Australia. Sharks' Bay (*Gaudichaud*), Champion Bay, Murchison river, *Oldfield* also *Drummond, n.* 70, *Roe.*

75. HELICHRYSUM.

(Petalolepis *and* Faustula, *Cass.*; Ozothamnus, *R. Br.*; Swammerdamia, *DC.*; Lawrencella, *Lindl.*; Argyrophanes, *Schlecht.*; Chrysocephalum, *Walp.*; Conanthodium, *A. Gray*; Xanthochrysum *and* Argyroglottis, *Turcz.*; Acanthocladium, *F. Muell.*)

Involucre from broadly hemispherical to narrow-ovoid or cylindrical, the bracts imbricate in several rows, either entirely or their laminæ rigidly or opaquely scarious or petal-like, more or less spreading or rarely appressed. Receptacle flat, convex or almost conical, without scales (or very rarely a few in the centre amongst sterile florets). Florets either all hermaphrodite, tubular, and 5- rarely 4-toothed, or a few in the circumference (very rarely 1 or 2 outer rows) female, slender but not longer than the others, 2- or 3-toothed, a few of the central ones sometimes sterile. Anthers with fine tails. Style-branches nearly terete, truncate or rarely with small conical tips. Achenes angular, terete or slightly compressed, not contracted at the top, glabrous papillose or rarely silky-villous. Pappus of capillary bristles simple or more or less barbellate or plumose at the end, not distinctly plumose from the base, those of the female florets often fewer or rarely wanting.—Herbs undershrubs or shrubs, with leafy stems, usually more or less clothed with cottony wool. Leaves alternate or the lower ones very rarely opposite, entire. Florets yellow, the laminæ of the involucral bracts usually white yellow brown or pink, often varying in all these colours with intermediate shades in the same species.

A large genus represented in most warm and temperate regions of the globe, especially numerous in S. Africa and Australia, but without any cosmopolitan species, the Australian ones being all endemic. The limits to be assigned to the group are very uncertain, as it is connected with so many others by almost insensible gradations. The radiating or irregular female florets which separate *Podolepis* and *Athrixia* are, in *P. Lessoni*, *P. rutidochlamys*, and *A. tenella*, and sometimes in *P. canescens*, but little different from those of *Helichrysum*. *Ixiolæna* passes into *Helichrysum* through *I. tomentosa* and *H. podolepideum*, *Leptorhynchus* through *L. ambiguus* and *L. tenuifolius*, which are very near the section *Chrysocephalum*, and yet cannot be generically separated from *L. squamatus*. The plumose pappus of *Helipterum* is not very distinct from the strongly barbellate pappus of *Lawrencella*, or the semiplumose one of *Chrysocephalum*. The more numerous female florets of *Chrysocephalum*, and the elastically spreading involucre of *H. collinum* and its allies, connect *Helichrysum* with *Raoulia* and through that genus with the *Eugnaphalieæ*, whilst through *Helipterum* and *Cephalipterum* there is a gradual passage into the *Angiantheæ*. And many other connections with other genera of *Gnaphalieæ* may be traced through South African and northern forms. We are obliged, therefore, as in the case of *Asteroideæ*, to make arbitrary demarcations, in order not to unite the whole tribe into one unmanageable genus. Those here adopted are the best that have suggested themselves after much consideration, although it must be admitted that in some instances they are not altogether satisfactory.

SECTION I. **Lawrencella.**—*Annuals. Involucre hemispherical or campanulate, the outer bracts brown sessile and appressed, the inner ones with coloured radiating laminæ. Achenes with erect transparent obtuse hairs (or elongated papillæ) or the centre ones sometimes abortive and glabrous.*

Branches and peduncles elongated and slender.
Involucres pink or white . . . . 1. *H. Lawrencella.*
Involucres golden-yellow.
Involucre hemispherical, $\frac{3}{4}$ to 1 inch diameter without the ray . . . . 2. *H. subulifolium.*
Involucre broadly campanulate, not $\frac{1}{2}$ in. diameter without the ray . . . . 3. *H. filifolium.*
Branches compact. Peduncles very short. Involucre ovoid-campanulate with yellow or white rays . . . . 4. *H. semifertile.*

SECTION II. **Xerochlæna.**—*Perennials, sometimes almost woody at the base, rarely also annual. Involucre broad, hemispherical, the outer sessile broad bracts passing more or less gradually into the intermediate or inner ones with scarious or linear claws and radiating coloured laminæ (scarcely conspicuous in* H. rutidolepis). *Achenes glabrous, papillose or rarely shortly villous.*

Flower-heads singly terminating the branches on long peduncles.
Pappus-bristles simple at the base, barbellate or almost plumose towards the end.
Involucral bracts elegantly ciliate, the intermediate (white or pink) more than twice as long as the florets, the innermost small and plumose . . . . 5. *H. Baxteri.*
Involucral bracts not ciliate, the intermediate (yellow) not twice as long as the florets.
Stems mostly erect and single headed. Involucre $\frac{3}{4}$ to 1 in. diameter . . . . 6. *H. scorpioides.*
Stems decumbent, often branched. Involucres not exceeding $\frac{1}{2}$ in. diameter . . . . 7. *H. rutidolepis.*
Involucral bracts not ciliate, the intermediate (white or pink) more than twice as long as the florets.
Achenes glabrous or papillose.
Stems erect, branching . . . . 8. *H. obtusifolium.*
Stems branching at the base only, the branches erect or ascending, single-headed . . . . 9. *H. dealbatum.*
Achenes shortly hirsute. Tufted plant with short erect single-headed stems . . . . 10. *H. pumilum.*
Flower-heads singly terminating the branches on long peduncles.
Pappus-bristles simple or equally denticulate.
Radiating involucral bracts rigid, mostly obtuse (yellow, brown, red, or white).
Stock tufted with short single-headed stems . . . . . 11. *H. Milligani.*
Stem tall, usually branched . . . . 12. *H. bracteatum.*
Radiating involucral bracts petal-like, mostly acute (white or pink).
No floral leaves.
Leaves lanceolate or oblong, cottony underneath or on both sides . . . . 13. *H. elatum.*
Upper leaves linear, glutinous, without cottony wool . . 14. *H. glutinosum.*
A few narrow linear floral leaves close under the involucre.
Leaves linear or linear-lanceolate, dilated and stem-clasping at the base, glutinous, without cottony wool . . 15. *H. adenophorum.*
Leaves linear to oblong-spathulate, scabrous above, cottony-white underneath . . . . 16. *H. leucopsidium.*
Flower-heads corymbose. Outer involucral bracts very woolly,

radiating ones white. Pappus-bristles more barbellate towards the end . . . . 17. *H. Blandowskianum.*

SECTION III. **Oxylepis.**—*Perennials or undershrubs. Involucres hemispherical or broadly campanulate, the bracts all with linear claws and radiating laminæ, narrow, acute, and often revolute. Pappus-bristles simple or shortly barbellate, not thickened nor more barbellate upwards.*

- Involucres broadly hemispherical, radiating laminæ subulate-acuminate.
  - Leaves linear with revolute margins, glabrous or glandular-pubescent . . . . 18. *H. oxylepis.*
  - Leaves oblong or lanceolate, cottony-white underneath.
    - Laminæ of the involucral bracts spreading or reflexed, the long ones longer than their loosely woolly or nearly glabrous claws . . . . 19. *H. collinum.*
    - Laminæ of the involucral bracts revolute, all shorter than their densely woolly claws . . . . 20. *H. rupicola.*
- Involucres campanulate, laminæ small, narrow, scarious. Leaves obovate or spathulate, woolly-white on both sides . . . . 21. *H. podolepideum.*

SECTION IV. **Chrysocephalum.**—*Herbs with corymbose flower-heads. Involucr ovoid-turbinate or almost globose, the bracts coloured in many rows scarcely exceeding th florets, appressed or squarrose, ciliate. Female florets in 1 or 2 rows, but not so numerou as the hermaphrodite ones. Achenes glabrous or papillose. Pappus-bristles few, simpl at the base, plumose at the end.*

- Leaves usually flat and cottony. Flower-heads often 6 to 8 lines diameter, loosely corymbose, the bracts scarcely squarrose . . 22. *H. apiculatum.*
- Leaves very narrow or not cottony. Flower-heads small, densely corymbose, the bracts often squarrose . . . . 23. *H. semipapposum.*

(The remarkable ciliate bracts and almost the pappus of *Chrysocephalum* occur also in *H. Baxteri*, which has solitary flower-heads and large radiating involucres, in *Leptorhynchus tenuifolius* and *L. ambiguus*, which have solitary flower-heads and the achenes usually contracted under the pappus, and in *Helipterum pterochætum*, which has the pappus plumose from the base.)

SECTION V. **Ozothamnus.**—*Shrubs or rarely undershrubs or herbs. Involucre small oblong-ovoid or turbinate-campanulate (rarely larger and ovoid-conical), the bracts imbricate, not exceeding the florets or the inner ones with small coloured radiating tips not much longer than the florets. Female florets few or none. Achenes glabrous or shortly villous. Pappus-bristles simple, often thickened or more denticulate towards the end.*

- Flower-heads rather large, solitary, ovoid or turbinate.
  - Cottony-white undershrub with spinescent branches. Involucral bracts scarious, without coloured tips . . . . . 24. *H. Dockerii.*
  - Divaricately-branched shrub (or undershrub ?) with little wool.
    - Involucral bracts rigid, the inner ones with radiating coloured tips . . . . 25. *H. argyroglottis.*
- Flower-heads small, in compound or small panicles.
  - Panicles loose, compound, almost leafless. Herbs or undershrubs with flat leaves.
    - Leaves nearly sessile, narrow. Involucres scarcely woolly, inner bracts with white spreading tips . . . . . . 26. *H. ramosum.*
    - Leaves distinctly petiolate. Involucres woolly.
      - Lower leaves cordate. Inner involucral bracts with white spreading tips . . . . 27. *H. cordatum.*
      - Leaves narrowed at the base. Tips of the involucral bracts scarcely squarrose . . . . 28. *H. obovatum.*

Panicles small, compact, terminating the leafy branches of shrubs (or undershrubs?). Involucral bracts scarious without spreading tips.

Leaves ovate on slender petioles. Branches slender, divaricate . . . . 29. *H. Bidwillii.*

Leaves elliptical-oblong or linear, almost sessile. Branches slender, divaricate . . . . 30. *H. Becklerii.*

Leaves very small, erect with recurved margins, sessile with rounded auricles. Branches virgate . . . . 31. *H. diotophyllum.*

Flower-heads small, usually numerous, in terminal corymbs. Erect shrubs.

Leaves linear with revolute margins, rarely almost lanceolate and flat.

Involucral bracts with concave erect or loose but not spreading obtuse tips, all or the inner ones white or pink.

Leaves not decurrent. Florets above 20 . . . . . . 32. *H. diosmifolium.*

Leaves decurrent in prominent lines. Florets about 10 to 12 . . . . 33. *H. adnatum.*

Involucral bracts erect, few, narrow, almost acute. Florets 3 34. *H. Cunninghamii.*

Involucral bracts more or less scarious, obtuse, without any or with scarcely conspicuous white tips.

Involucre broadly campanulate. Florets above 20. Achenes villous. Leaves coriaceous, obtuse . . . . 35. *H. reticulatum.*

Involucre ovoid-turbinate. Florets above 15. Achenes glabrous or papillose.

Leaves not decurrent . . . . 36. *H. cinereum.*

Leaves shortly decurrent . . . . 37. *H. bracteolatum.*

Involucre narrow. Florets 10 to 15. Achenes glabrous 38. *H. cassinioides.*

Involucral inner bracts with white tips usually spreading. Florets under 15 and usually under 12.

Leaves much revolute, very narrow, obtuse, ¾ to 1 in. long. Corymbs compound, very dense. Involucres nearly 3 lines long . . . . 39. *H. Gunnii.*

Leaves much revolute, thick and very obtuse, under ½ in. long, tomentose above when young. Corymbs small and dense . . . . 40. *H. ledifolium.*

Leaves narrow with revolute margins, mostly obtuse, from under ½ to above 1 in. long. Corymbs usually in leafy panicles . . . . 41. *H. rosmarinifolium.*

Leaves nearly flat, linear or lanceolate, often acute, from under ½ to near 2 in. long. Corymbs compound, mostly flat . . . . 42. *H. ferrugineum.*

Leaves obovate or cuneate, flat or with recurved margins.

Involucral bracts without any or with very small white not spreading tips.

Involucres turbinate-campanulate. Florets above 20 . . 43. *H. antennarium.*

Involucres narrow. Florets about 12 . . . . 44. *H. obcordatum.*

Involucral inner bracts with small white spreading tips.

Florets about 12 to 15. Leaves mostly obovate or almost oblong, under ½ in. long . . . . 45. *H. Backhousii.*

Florets about 4 to 6. Leaves mostly cuneate, ½ to 1½ in. long . . . . 46. *H. cuneifolium.*

Leaves almost scale-like with revolute margins, ½ to 1 line long.

Leaves closely erect. Flower-heads capitate. Inner involucral bracts with white spreading tips. Florets 2 to 4 . 47. *H. baccharoides.*

Leaves closely reflexed.

Flower-heads corymbose. Involucral bracts with white concave tips. Florets 8 to 10 . . . . 48. *H. lepidophyllum.*

Flower-heads capitate. Involucral bracts without white tips. Florets 12 to 18 . . . . 49. *H. scutellifolium.*
Leaves small, convex or keeled underneath, concave above.
  Leaves erect and closely appressed, scale-like. Flower-heads corymbose . . . . 50. *H. pholidotum.*
  Leaves loosely erect or spreading. Flower-heads capitate.
    Involucral bracts with concave tips. Florets above 20 . 51. *H. lycopodoides.*
    Involucral inner bracts with spreading tips. Florets 8 to 12 . . . . 52. *H. selaginoides.*

SECTION I. LAWRENCELLA.—Annuals. Involucre hemispherical or campanulate, the outer bracts brown, sessile and appressed, the inner ones with linear-scarious claws and radiating coloured laminæ. Receptacle flat or convex. Achenes with erect transparent obtuse hairs (or elongated papillæ), the central ones sometimes abortive and glabrous. Pappus equally and sometimes strongly barbellate. Annuals.

1. **H. Lawrencella,** *F. Muell. Herb.* An erect slender branching annual, often exceeding 1 ft., glabrous or nearly so in the typical form. Leaves linear, very narrow, frequently opposite. Flower-heads on long peduncles. Involucre hemispherical, in the ordinary form about ½ in. diameter without the rays, the outer bracts brown, lanceolate, appressed, with scarious margins and slightly woolly, the inner with a broad linear claw, and oblong obtuse spreading petal-like laminæ, 4 to 6 lines long, pink or white. Receptacle flat. Florets all hermaphrodite, about as long as the claws of the inner bracts. Achenes, at least the perfect ones, more or less hispid with transparent hairs (or elongated papillæ). Pappus of numerous barbellate bristles, not thickened upwards.—*Lawrencella rosea*, Lindl. Swan Riv. App. 23.

W. Australia. Swan River, *Drummond, 1st Coll.;* Cape Riche, Salt river and Bremer Bay, *Maxwell;* Murchison river, *Oldfield* (with large flower-heads).

Var. *Davenportii.* Glabrous or papillose-pubescent, the leaves sometimes lanceolate. Flower-heads large, the central florets sterile with elongated abortive achenes and the pappus-bristles almost plumose.—*H. Davenportii*, F. Muell. Fragm. iii. 32.

S. Australia. Neales river, *M'Douall Stuart.*

W. Australia. Near Sapphire Lake, *Harper;* Bowes river, *Oldfield.*

I should have maintained this as a distinct species, but that among the very few specimens seen (in Herb. F. Mueller) some have precisely the foliage of *H. Lawrencella*, and among those we have of the typical form with smaller flower-heads a few of the central florets are occasionally abortive with elongated achenes, and Oldfield's Murchison river specimens have the heads quite as large as in *H. Davenportii*, but all the florets perfect.

2. **H. subulifolium,** *F. Muell. Fragm.* iii. 134. An erect glabrous annual, with the narrow leaves of *H. Lawrencella*, but they are seldom opposite and the stems are simple or not much branched. Flower-heads large, on long peduncles. Involucre hemispherical, ¾ to above 1 in. diameter without the ray, the outer bracts brown and appressed as in *H. Lawrencella*, the inner with linear claws and large oblong spreading laminæ of a bright golden colour. Receptacle very convex. Florets as long as the claws of the inner bracts. Achenes hispid with erect transparent hairs. Pappus-bristles not so numerous as in *H. Lawrencella*, strongly barbellate, not thickened upwards.

W. Australia, *Drummond.* Greenough river and Champion Bay, *Oldfield* (with particularly large flower-heads).

3. **H. filifolium,** *F. Muell. Fragm.* iii. 134. A slender erect annual, glabrous or nearly so, simple or corymbosely branched, 6 in. to 1 ft. high. Leaves very narrow-linear, the lower ones often opposite. Flower-heads nearly of *H. subulifolium*, but much smaller. Involucre campanulate, not ½ in. diameter without the rays, the outer bracts appressed, the inner with radiating laminæ of a golden-yellow about 3 lines long. Achenes hispid with transparent hairs. Pappus-bristles about 15 to 20, strongly barbellate. —*Xanthochrysum filifolium*, Turcz. in Bull. Mosc. 1851, i. 199. t. 4 (the upper hairs of the achene mistaken for an outer pappus); *Helipterum tenellum*, A. Gray in Hook. Kew Journ. iv. 230, not of Turcz.

W. Australia, *Drummond, 3rd Coll. n.* 119 *or* 219.

This and the preceding species (which are very closely allied) have the pappus-bristles more strongly barbellate than usually in the genus, but scarcely enough so to be classed with the plumose pappus of *Helipterum*.

4. **H. semifertile,** *F. Muell. Rep. Babb. Exped.* 14. An erect much-branched annual of 2 to 6 in., very slightly woolly-tomentose or glabrous. Leaves narrow-linear, obtuse. Flower-heads on very short peduncles, forming an irregular leafy corymb. Involucre ovoid-campanulate, about 3 lines long, the outer bracts sessile, obtuse and appressed, brown or pale-coloured, the innermost with oblong whitish or bright yellow radiating laminæ, smaller than in the preceding species. Florets 10 to 15, some of the inner ones frequently sterile. Achenes sprinkled with erect transparent hairs. Pappus-bristles rather numerous, barbellate especially towards the end. *Pteropogon ramosissimus*, F. Muell. in Linnæa, xxv. 412.

N. S. Wales. Goyinga mountains, *Victorian Expedition;* between Stokes range and Cooper's Creek, *Wheeler.*

S. Australia. Between Flinders range and Spencer's Gulf, near Cudnaka, *F. Mueller;* Wills Creek, *Howitt's Expedition.*

SECTION II. XEROCHLÆNA.—Herbaceous perennials, sometimes woody at the base, rarely flowering also the first year so as to appear annual. Involucre broad, hemispherical, the outer bracts sessile, passing more or less gradually into inner ones with linear or broad scarious claws and petal-like radiating laminæ (scarcely conspicuous in *H. rutidolepis*), the innermost of all often shorter and narrower. Receptacle flat or convex. Achenes glabrous, papillose, or very rarely shortly villous.

5. **H. Baxteri,** *A. Cunn.; DC. Prod.* vi. 193. Stems shortly branching and almost woody at the base, with erect usually simple rather slender but rigid branches, of ½ to 1½ ft., white with a close cottony wool. Leaves narrow-linear, ½ to 1 in. long, with revolute margins, cottony-white when young, at length glabrous above. Flower-heads terminal and solitary. Involucre broadly hemispherical, expanding to above 1 in. diameter, the bracts in many rows, sometimes slightly woolly at the base, all elegantly ciliate, the outer ones short, broadly lanceolate, usually tinged with brown, passing into the intermediate ones with petal-like laminæ, pure white or slightly straw-coloured on slender claws, the inner rows much shorter with small plumose laminæ. Florets very numerous, not half so long as the involucre. Achenes glabrous. Pappus of 6 to 8 bristles, simple at the base, more or less plu-

mose at the end.—*Argyrophanes Behrii*, Schlecht. Linnæa, xx. 596; *Chrysocephalum Behrianum*, Sond. in Linnæa, xxv. 517.

Victoria. In the Grampians, *Wilhelmi;* Mount Sturgeon, *Robertson;* Wimmera, *Dallachy* (with smaller straw-coloured heads).

S. Australia. South coast, *Baxter;* between Gawler and Light rivers, *Behr;* from the Murray to St. Vincent's Gulf, common; also near Spencer's Gulf, *F. Mueller.*

6. **H. scorpioides,** *Labill. Pl. Nov. Holl.* ii. 45. *t.* 191. Stems from a perennial tufted or decumbent and shortly branching base, ascending or erect, usually simple, often exceeding 1 ft. and rather weak, but sometimes shorter and more rigid, clothed with a white deciduous cottony wool. Leaves from oblong-spathulate to linear, mostly acute, glabrous or scabrous above, loosely woolly underneath, the upper ones few and small. Involucre broadly hemispherical, from about ¾ to 1 in. diameter, the bracts very numerous and spreading, not ciliate, the outer ones short, often tinged with brown, passing into the intermediate ones, of a bright yellow, usually narrow, but obtuse and gradually contracted into the claw, the innermost smaller. Florets exceedingly numerous, more than half as long as the involucre. Achenes glabrous. Pappus-bristles not very numerous, slender, shortly and often sparingly barbellate towards the end.—DC. Prod. iii. 194; Hook. f. Fl. Tasm. i. 211; *Gnaphalium scorpioides*, Poir. Dict. ii. 808; *Helichrysum buphthalmoides*, Sieb. Pl. Exs.; *H. Gunnii*, Hook. f. in Hook. Ic. Pl. t. 320.

N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown, Sieber, n.* 333, and others; northward to Macleay and Clarence rivers, *Beckler;* in the interior in all the fertile lands towards Bathurst, *Fraser, A. Cunningham;* southward to Twofold Bay, *F. Mueller.*

Victoria. In cool hilly pastures from the Glenelg to Gipps' Land, *F. Mueller, Robertson*, and others; Wimmera, *Dallachy.*

Tasmania. Abundant throughout the island, especially in moist pastures, ascending to 4000 ft., *J. D. Hooker.*

S. Australia. Rivoli Bay, Bagle ranges, *F. Mueller;* Onkaparinga river, *Whittaker.*

7. **H. rutidolepis,** *DC. Prod.* vi. 194. A decumbent or loosely branched perennial, almost woody at the base, with a little loose deciduous wool. Leaves oblong, lanceolate or linear, acute or mucronate, mostly narrowed below the middle, but stem-clasping at the base, ½ to nearly 2 in. long. Flower-heads solitary on almost leafless peduncles. Involucre hemispherical, not exceeding ½ in. diameter and often smaller, the bracts spreading in many rows, the outer short ones tinged with brown and passing into the inner or intermediate ones, which have a more distinct obtuse yellow lamina, rather longer than the florets and often transversely wrinkled. Florets very numerous, a few of the outer ones female and almost or quite without pappus, the others hermaphrodite. Achenes glabrous. Pappus-bristles minutely serrulate or simple at the base, more distinctly but sparingly barbellate towards the end.—*H. erosum*, Schlecht. Linnæa, xx. 595.

N. S. Wales. Pastures about Camden and Argyle county, *A. Cunningham;* Bathurst, *Clowes;* Blue Mountains, *Woolls.*

Victoria. Near Melbourne, *F. Mueller;* Wendu vale, *Robertson.*

S. Australia. Onkaparinga and Torrens river, *F. Mueller.*

F. Mueller now considers this as a variety of *H. scorpioides*, to which it is certainly nearly allied, but the loose branching habit and small flower-heads appear to be constant, as far as shown by our numerous specimens,

8. **H. obtusifolium,** *F. Muell. and Sond. in Linnæa*, xxv. 513. Erect and branching with a hard often woody base, but perhaps flowering sometimes the first year so as to appear annual, very variable in stature, above 1 ft. high in the original form, silvery-white with a close cottony wool or at length nearly glabrous. Leaves linear, obtuse, with revolute margins, sometimes narrow and above ½ in. long, sometimes very small. Flower-heads solitary, terminating the branches. Involucre hemispherical, spreading from about ½ in. to above 1 in. diameter, the outer short brown bracts often woolly at the base, passing gradually or almost abruptly into the inner ones, which have a short claw and a white narrow lamina, ¼ to ½ in. long, rarely tinged with pink. Florets very numerous, much less than half as long as the involucre, a few of the outer ones female with a reduced or no pappus, the others hermaphrodite. Achenes glabrous or papillose. Pappus-bristles 15 to 20, simple at the base, strongly barbellate towards the end.—*Helipterum niveum*, Steetz in Pl. Preiss. i. 475.

N. S. Wales. Twofold Bay, *F. Mueller.*

Victoria. Wilson's Promontory, *F. Mueller*; Glenelg river, *F. Mueller*, *Robertson*; Grampians, *Wilhelmi*; Wimmera, *Dallachy.*

S. Australia. Encounter Bay, *F. Mueller*; Adelaide, *Whittaker.*

W. Australia. King George's Sound and adjoining districts, *Baxter*, *Drummond*, *n.* 84, *Preiss*, *n.* 11, and others (the leaves usually, but not always, narrower than in the Eastern specimens).

Var. *tephrodes.* Under 6 in. high and dichotomously branched, the branchlets sometimes ending in a short spine. Leaves few and small. Flower-heads small.—*Ozothamnus tephrodes*, Turcz. in Bull. Mosc. 1851, ii. 79.—Wimmera, *Dallachy*; Encounter Bay, *Whittaker*; Kangaroo Island, *Waterhouse*; Phillips river *Maxwell*; also *Drummond*, *5th Coll. n.* 385.

Var. *squamiger.* Like the preceding variety, but more slender and the leaves all reduced to minute linear scales.—Near Oldfield river, *Maxwell.*

9. **H. dealbatum,** *Labill. Pl. Nov. Holl.* ii. 45. *t.* 190. Stems from a perennial tufted or shortly creeping and branching base, ascending or erect, simple and single-headed, rarely attaining 1 ft., white with a close cottony wool. Leaves radical or at the base of the stems, oblong-lanceolate or slightly spathulate, acute or obtuse, rarely exceeding 1 in., usually flat and glabrous above, cottony-white underneath, the upper ones few, small and narrow. Involucre broadly hemispherical, spreading to from 1 to nearly 1½ in. diameter, the bracts in many rows, the outer short brownish or reddish ones passing gradually into the intermediate lanceolate petal-like ones, of a pure white and often striate, the innermost smaller. Florets very numerous, much less than half as long as the involucre, a few of the outer ones female. Achenes glabrous or papillose. Pappus-bristles barbellate towards the end, scarcely so at the base.—DC. Prod. vi. 189; Hook. f. Fl. Tasm. i. 213; *Gnaphalium niveum*, Poir. Dict. Suppl. ii. 808.

Tasmania. Derwent river and Port Dalrymple, *R. Brown*; in various parts of the colony, generally in a poor wet soil, *J. D. Hooker.*

10. **H. pumilum,** *Hook. f. Fl. Tasm.* i. 213. *t.* 60. A small perennial, with a tufted stock. Leaves chiefly radical, linear or linear-cuneate, obtuse

with revolute margins, 1 to 2 in. long, glabrous above when full grown, cottony-white underneath. Scapes or flowering stems under 6 in. high, simple and single-headed with 1 or 2 narrow, small, distant leaves. Flower-heads of *H. dealbatum*, but rather smaller and the bracts rather more rigid, the intermediate radiating ones white as in that species. Florets rather longer than in *H. dealbatum*, but much less than half the length of the involucre. Achenes in all the specimens seen more or less silky-hirsute. Pappus-bristles barbellate toward the end, scarcely so at the base.

Tasmania. Around Macquarrie Harbour, *Milligan*, *Gunn*.

11. **H. Milligani,** *Hook. f. Fl. Tasm.* i. 214. *t.* 60. A small perennial with a tufted almost woody stock and simple single-headed erect stems, rarely exceeding 6 in., covered with cottony wool. Leaves chiefly crowded near the base, but also scattered on the stem, the lowest petiolate and almost ovate, passing into oblong-spathulate, and the uppermost lanceolate, all flat, glabrous or nearly so. Flower-heads large, the involucres spreading to 1½ in. diameter, white straw-coloured or tinged with red, the bracts as well as the florets, achenes, and pappus those of *H. bracteatum*.

Tasmania. Summits of Mount Pearse and of Mount Sorrell, *Gunn*, *Milligan*; Mount Lapeyrouse, *C. Stuart*.—Notwithstanding the habit, which is that of *H. pumilum*, this may prove to be an alpine variety of *H. bracteatum*.

12. **H. bracteatum,** *Willd.*; *DC. Prod.* vi. 188. An erect branching or simple perennial, of 1 to 2 ft., often flowering the first year so as to be also annual, glabrous scabrous or sprinkled with a few hairs, without cottony wool. Leaves from linear to oblong-lanceolate or the lower ones obovate-oblong, the longer ones often attaining 3 or 4 in., green and sometimes somewhat glutinous. Flower-heads large, solitary or few together on separate peduncles. Involucre hemispherical, spreading to from a little more than 1 in. to nearly 2 in. diameter, in the original form shining yellow or straw-coloured with more or less of a reddish-brown, the outer bracts short ovate and sessile, the inner gradually longer and more lanceolate on a short broad claw, the innermost narrow and rather shorter, all rigid and usually obtuse. Florets very numerous, very much less than half the length of the involucre, the outer ones female and slender. Achenes glabrous or slightly papillose. Pappus-bristles denticulate, not thickened upwards, slightly cohering at the base.—Hook. f. Fl. Tasm. i. 210; Steetz in Pl. Preiss. i. 471; *Xeranthemum bracteatum*, Vent. Jard. Malm. t. 2; *Helichrysum chrysanthum*, Pers. Syn. Pl. ii. 414; *Elichrysum lucidum*, Henckel, Adumbr. (DC.); *Helichrysum viscosum*, Sieb. Pl. Exs.; *H. Banksii*, A. Cunn. in DC. Prod. vi. 188 (with rather broad leaves); *H. bicolor*, Lindl. Bot. Reg. t. 1814 (with narrow leaves); *H. acuminatum*, DC. Prod. vi. 188 (with less obtuse involucral bracts); *H. macrocephalum*, A. Cunn. in DC. l. c. (with large flower-heads).

N. Australia. Port Essington, *Armstrong*.

Queensland. Abundant along the whole coast, *Banks and Solander*, *R. Brown*, and many others.

N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown*, *Sieber*, *n.* 345, and others; lagoons of the interior, *A. Cunningham*; New England, *C. Stuart*; Clarence and Hastings rivers, *Beckler*.

Victoria. From the Glenelg to Gipps' Land, *F. Mueller, Robertson,* and others; snowy top of Mount Buller, *F. Mueller;* Wimmera, *Dallachy.*

Tasmania. Abundant throughout the island, especially in marshy situations, *J. D. Hooker.*

S. Australia. From the Murray to St. Vincent's and Spencer's Gulfs, *F. Mueller* and others.

W. Australia. Swan River, *Drummond, Preiss, n.* 4.

Var. *albidum,* DC. Prod. vi. 189. Involucral bracts white, passing into straw-colour pale brown or pink.—*H. papillosum,* Labill. Pl. Nov. Holl. ii. 46. t. 192; DC. Prod. vi. 189; Hook. f. Fl. Tasm. i. 212; *Gnaphalium papillosum,* Poir. Dict. Suppl. ii. 808; *H. glabratum,* DC. Prod. vi. 189 (from the character given); *H. macranthum,* Benth. in Hueg. Enum. 65; DC. Prod. vi. 189; Paxt. Mag. v. 247, with a fig.; Steetz in Pl. Preiss. i. 471; Bot. Reg. 1838, t. 58; *H. niveum,* Grah. in Bot. Mag. t. 3857; Steetz in Pl. Preiss. i. 471.—Victoria, Tasmania, and W. Australia, in the latter colony at least as abundant as the yellow (including *Drummond, 3rd Coll. n.* 170, *4th Coll. n.* 114, *also n.* 197, and *Preiss, n.* 1).

13. **H. elatum,** *A. Cunn. in DC. Prod.* vi. 193. A stout erect herb or undershrub, sometimes under 1 ft. high and almost simple, in rich shaded situations branching, attaining 7 or 8 ft. and almost woody at the base, clothed with a loose or close cottony wool. Leaves lanceolate or ovate-lanceolate, contracted into a petiole, stem-clasping at its base, the larger ones attaining 2 to 3 or rarely 4 in., the upper surface becoming at length glabrous. Flower-heads large, solitary or loosely paniculate. Involucre hemispherical, spreading to from 1 to 1½ in. diameter, the bracts narrow, acute, petal-like, white or tinged with pink, the outer ones short and sessile, the intermediate long ones on a narrow claw, the innermost shorter and very narrow. Florets exceedingly numerous, much less than half as long as the involucre, a few of the outer ones slender and female. Achenes glabrous or papillose. Pappus-bristles slender, scarcely denticulate, not thickened upwards, shortly cohering at the base.—*H. lanuginosum,* A. Cunn. in DC. Prod. vi. 193; *H. albicans,* Sieb. Pl. Exs.

Queensland. Keppel Bay and Northumberland islands, *R. Brown;* Dawson and Mackenzie ranges, *F. Mueller;* Rodd's Bay, *A. Cunningham;* Port Denison, *Fitzalan* (the leaves quite glabrous); Rockhampton, *Dallachy.*

N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown, Sieber, n.* 346, and *Fl. Mixt. n.* 516, and others; northward to Hastings, Macleay, and Clarence rivers, *Beckler;* New England, *C. Stuart;* southward to Illawarra, *A. Cunningham;* Twofold Bay, *F. Mueller;* Gabo Island, *Maplestone.*

Victoria. Damp valleys, between Wombaza and Genoa river, *F. Mueller.*

Var. *Fraseri.* More shrubby. Leaves crowded, the wool long and very deciduous or none, and sometimes the branches slightly glutinous.—Rocks of Mount Lindsay, at an elevation of 5000 ft., *Fraser, W. Hill;* Port Curtis, *M'Gillivray.*

14. **H. glutinosum,** *Hook.* (as a *Helipterum*). A tall erect branching herb or undershrub, the lower part of the stem and foliage sometimes woolly-white, the upper portion glutinous and scabrous or pubescent without wool. Lower leaves narrow-lanceolate, sometimes densely woolly underneath, glutinous above, the upper ones crowded, narrow-linear with revolute margins, glutinous on both sides, without wool, not dilated at the base, and passing into a few distant subulate bracts on the peduncle. Flower-heads of *H. elatum* or rather smaller. Florets, achenes, and simple pappus-bristles of that species. *Helipterum glutinosum,* Hook. in Mitch. Trop. Austr. 361

Queensland. On the Maranoa, *Mitchell;* ridges of the Suttor, *F. Mueller.*
N. S. Wales. Sources of the Boyd river, *Leichhardt.*
Considered by F. Mueller, and perhaps correctly so, as a variety of *H. elatum.*

15. **H. adenophorum,** *F. Muell. in Trans. Vict. Inst.* 1855, 38. A perennial or undershrub, with erect branching stems of 1 to 3 ft., glandular-scabrous without cottony wool. Leaves linear or linear-lanceolate, with revolute margins, slightly dilated and stem-clasping at the base or very shortly decurrent. Flower-heads large, solitary at the ends of the branchlets. Involucre broadly hemispherical, spreading to from 1 to 1½ in. diameter, closely surrounded by 2 or 3 small linear glandular-scabrous leaves, the bracts white or tinged with pink, thin and petal-like, the outer short sessile ones sometimes very pale brown, the intermediate lanceolate-oblong, on dilated claws, a very few of the innermost smaller. Florets very numerous, rather less than half as long as the involucres. Achenes glabrous. Pappus-bristles slender, finely but very shortly barbellate, not perceptibly thickened upwards in the specimens seen.

S. Australia. Barren elevations, Kangaroo Island, *F. Mueller;* scrub near Wallan's Hut, *Waterhouse.*

In general aspect and foliage it closely resembles some specimens of *Waitzia nivea,* but is readily distinguished by the broader claws of the inner involucral bracts, and the achenes not beaked.

16. **H. leucopsidium,** *DC. Prod.* vi. 193. A perennial, with decumbent ascending or almost erect stems, nearly simple or loosely-branched, bearing a little cottony wool. Leaves from linear to oblong-spathulate, obtuse, with recurved margins, mostly ¾ to 1½ in. long, usually very scabrous above and cottony-white underneath. Flower-heads large, solitary at the ends of the branches. Involucre broadly hemispherical, spreading to from 1 to 1½ in. diameter, closely surrounded by 2 or 3 small linear woolly floral leaves, the bracts white or tinged with pink, thin, petal-like, and usually striate, the outer short sessile ones often pale brown, the intermediate lanceolate on broad claws, the innermost narrower and shorter. Florets very numerous, rather less than half as long as the involucres. Achenes glabrous. Pappus-bristles slender, numerous, very slightly barbellate, not thickened upwards. Hook. f. Fl. Tasm. i. 213. t. 59.

N. S. Wales. Port Jackson, *R. Brown.*
Victoria. From the Glenelg to Wilson's Promontory, *F. Mueller* and others; Wimmera, *Dallachy.*
Tasmania. Port Dalrymple, *R. Brown;* sand hills, North coast, and Flinders' Island, *J. D. Hooker* and others.
S. Australia. Memory Cove, *R. Brown;* Encounter Bay and near Adelaide, *Whittaker;* Streaky Bay and Spencer's Gulf, *Warburton.*
W. Australia. King George's Sound and adjoining districts, *Baxter, Drummond, n.* 346; eastward to Cape Arid, *Maxwell.*

17. **H. Blandowskianum,** *Steetz; Sond. in Linnæa,* xxv. 512. Stems, from a perennial almost woody stock, erect, branched only at the top, 1 to 1½ ft. high, covered as well as the foliage with a dense cottony wool. Leaves linear or lanceolate, soft and thick, 1 to 2 in. long. Flower-heads rather large, in a terminal corymb. Involucre broadly hemispherical,

spreading to a diameter of ¾ to 1 in., the outer bracts few, densely woolly with small laminæ, the intermediate with narrow claws and white petal-like radiating laminæ, the innermost small. Florets very numerous, not half so long as the involucre. Achenes papillose. Pappus-bristles about 12, slender, slightly thickened and barbellate upwards.

Victoria. In the Grampians, *Wilhelmi*; Wimmera, *Dallachy*; Glenelg river, *Robertson, Allitt.*

S. Australia. Near Adelaide, *Blandowsky*; Mount Gambier, Rivoli Bay, Encounter Bay, *F. Mueller.*

Section III. Oxylepis.—Perennials or undershrubs. Involucre hemispherical or broadly campanulate, bracts all with linear claws and radiating laminæ, narrow-acute and often revolute. Pappus-bristles simple or shortly barbellate, not thickened nor more barbellate upwards.

18. **H. oxylepis,** *F. Muell. Fragm.* i. 35. A perennial, with erect or ascending stems of 1 to 2 ft., branching, hard and almost woody at the base, with a little loose wool. Leaves linear, with revolute margins, or very narrow-lanceolate and flat, 1½ to nearly 3 in. long, becoming nearly or quite glabrous, the upper ones few and very small. Flower-heads rather large, solitary. Involucre broadly hemispherical, the bracts numerous and narrow, the claws nearly glabrous, the laminæ (brownish-yellow when dry) subulate-pointed and spreading like those of *H. collinum*, but shorter, although longer than the florets. Florets exceedingly numerous, all or nearly all hermaphrodite. Achenes and pappus of *H. collinum.*

Queensland. Bustard Bay, *Banks and Solander*; sandy shore, Moreton Island, *F. Mueller.*

N. S. Wales. Grose Head, *R. Brown*; also *Backhouse.*

This may possibly be a variety of *H. collinum.*

19. **H. collinum,** *DC. Prod.* vi. 190. A herb or undershrub (of 1 to 2 ft.?), with the habit of some of the compact varieties of *H. elatum*, dotted with white cottony wool. Leaves oblong-lanceolate, mostly 1 to 2 in. long, woolly-white underneath or on both sides. Flower-heads rather large, solitary, the almost leafless peduncles rarely exceeding 2 in. and sometimes very short. Involucre broadly hemispherical, spreading to a diameter of 1 in. or rather more, the bracts very numerous, all with narrow appressed loosely-woolly or sometimes nearly glabrous claws, and very narrow subulate-pointed spreading or reflexed laminæ, pale brown-yellow when dry, varying in length, but the longest intermediate ones always exceeding the florets. Florets exceedingly numerous, all hermaphrodite or a very few outer ones female. Achenes glabrous. Pappus-bristles numerous, fine, minutely serrulate.

Queensland. Bare ridges of Endeavour river, and around Port Bowen, *A. Cunningham*; Harvey's Bay, Sandy Cape, *R. Brown* (with smaller flower-heads).

N. S. Wales. New England, *C. Stuart*; Bent's Basin, *Woolls.*

20. **H. rupicola,** *DC. Prod.* vi. 190. Apparently an undershrub, with the habit, foliage, and nearly all the characters of *H. collinum*, of which it may be a variety; but the almost leafless woolly peduncles are usually 6 to 9 in. long, the flower-heads rather smaller and flatter, the appressed claws of

the involucral bracts very woolly and their laminæ smaller and revolute, the longest intermediate ones, although exceeding the florets, are yet much shorter than their claws. Florets and pappus of *H. collinum.*

Queensland. Cape Grafton, *Banks and Solander*; rocky shores of Cleveland Bay, *A. Cunningham*; Dunk and Goold islands, *M'Gillivray*; Rockingham Bay, *Dallachy.*

21. **H. podolepideum,** *F. Muell. Rep. Babb. Exped.* 13. An undershrub or perhaps a low shrub, densely clothed with a cottony wool. Leaves petiolate, obovate or oblong, 1 to 2 in. long, soft and thick. Flower-heads on almost leafless peduncles of 2 to 4 in. Involucre broadly campanulate, ½ to nearly ¾ in. diameter, the bracts numerous, appressed, narrow, with narrow, acute or slightly jagged scarious laminæ, the longest slightly exceeding the florets, of a pale straw-colour or dirty white. Florets exceedingly numerous, all (or nearly all?) hermaphrodite. Achenes glabrous. Pappus-bristles not very numerous, shortly barbellate.

N. S. Wales. Mount Goningberi, *Victorian Expedition*; near the Barrier Range, *Panton.*
S. Australia. To the N.W. of Lake Torrens, *Herb. F. Mueller.*

This species, as well in habit as in characters, connects the subsection *Oxylepis* with *Ixiolæna tomentosa.*

SECTION IV. CHRYSOCEPHALUM.—Herbs, with corymbose flower-heads. Involucre ovoid-turbinate or almost globose, the bracts coloured, in many rows, scarcely exceeding the florets, ciliate, appressed or squarrose, not radiating. Female florets in 1 or 2 rows, but not so numerous as the hermaphrodite ones. Achenes glabrous or papillose. Pappus-bristles few, simple at the base, plumose at the end.

22. **H. apiculatum,** *DC. Prod.* vi. 195. A perennial or perhaps annual, usually branching and hard at the base, with several erect stems, attaining 1 to 2 ft., clothed with a soft silvery tomentum, which rarely disappears from the older leaves. Radical and lower leaves oblong-cuneate and petiolate, the upper ones lanceolate or linear, or sometimes all narrow, the larger ones 1 to 2 in. long. Flower-heads in more or less dense terminal corymbs. Involucres in the original form broadly turbinate or nearly globose, about ½ in. diameter, of a bright golden colour, but sometimes much smaller, and, especially in the Western forms, passing into brown, red, straw-coloured, pure white, or pink. Bracts small and very numerous, the laminæ lanceolate, more or less ciliate, the outer ones sessile, the inner ones on woolly claws, all acute or the innermost obtuse, appressed or more rarely squarrose. Florets often as long as the involucre, those of the circumference in 1 or sometimes 2 rows, female, slender, with a reduced or abortive pappus, those of the disk very numerous. Achenes glabrous. Pappus of the disk of 4 to 10 fine bristles, strongly barbellate or almost plumose towards the end. Hook. f. Fl. Tasm. i. 212; *Gnaphalium apiculatum*, Labill. Pl. Nov. Holl. ii. 43. t. 188; Bot. Reg. t. 240; *G. flavissimum*, Sieb. Pl. Exs.; *Helichrysum flavissimum*, DC. Prod. vi. 195; *H. odorum*, DC. l. c. 196; *Chrysocephalum helichrysoides*, Walp. in Linnæa, xiv. 503; *C. apiculatum*, Steetz in Pl. Preiss. i. 474; *C. vitellinum*, Sond. and Muell. in Linnæa, xxv. 514 (the root apparently annual).

N. Australia. Arnhem's Land, *F. Mueller.*

Queensland. Bustard Bay, *Banks and Solander;* Keppel islands, *M'Gillivray;* on the Maranoa, *Mitchell.* (These specimens appear more shrubby and woolly, with broader leaves and larger flower-heads, than the others, but the smaller forms are also in many Queensland collections.)

N. S. Wales. Port Jackson, *R. Brown*, *Sieber, n.* 336, and others, and from various parts of the colony in numerous collections.

Victoria. Throughout the colony, *F. Mueller* and others.

Tasmania. Port Dalrymple, *R. Brown:* abundant throughout the island, *J. D. Hooker.*

S. Australia. Memory Cove, *R. Brown:* from the Murray to St. Vincent's and Spencer's gulfs, *F. Mueller* and others.

Var. *minor.* Leaves narrow but woolly, flower-heads smaller but not numerous, connecting this with *H. semipapposum.—H. ramosissimum*, Hook. in Mitch. Trop. Austr. 83.—Chiefly in dry barren situations in all the eastern colonies.

Var. *occidentale.* Leaves narrow. Flower-heads medium-sized, the bracts appressed or squarrose, as frequently white pink or straw-coloured as yellow.—*Chrysocephalum squarrulosum*, Steetz in Pl. Preiss. i. 472; *C. flavissimum*, Steetz, l. c. 473; *C. canescens*, Turcz. in Bull. Mosc. 1851, i. 196; *C. glabratum*, Turcz. l. c. 197.

W. Australia. King George's Sound and adjoining districts, *Drummond, n.* 20, 115, 121, 342, 343, *Preiss, n.* 23, 25, *Oldfield, Maxwell.*

23. **H. semipapposum,** *DC. Prod.* vi. 195. Very closely allied to *H. apiculatum*, and probably a variety, often scarcely to be distinguished from some forms of that species. Stems usually more erect and stiff, though not so stout. Leaves narrow, often entirely deprived of wool, but sometimes quite cottony-white. Flower-heads small, more numerous and corymbose than they usually are in *H apiculatum*, and the bracts more frequently squarrose, but none of these differences constant.—Hook. f. Fl. Tasm. i. 211; *Gnaphalium semipapposum*, Labill. Pl. Nov. Holl. ii. 42. t. 187; *Helichrysum ciliatum*, *H. squarrulosum*, and *H. brevicilium*, DC. Prod. vi. 195, 196; *Chrysocephalum asperum* and *C. semipapposum*, Steetz in Pl. Preiss. i. 473, 474; *C. squarrulosum*, Sond. in Linnæa, xxv. 515.

Appears to be as common as *H. apiculatum*, or nearly so, in **N. S. Wales, Victoria, Tasmania,** and **S. Australia,** but the respective distribution is uncertain, for, having several hundred specimens before me from very numerous localities of this and the preceding species, I have in vain endeavoured to distribute them satisfactorily into two or any greater number of distinct groups.

Var. *brevifolium*, Sond. in Linnæa, xxv. 515. Nearly glabrous and sometimes glutinous. Leaves numerous, small, and often clustered. Flower-heads small, not numerous, the bracts frequently squarrose.—*H. microlepis*, DC. Prod. vi. 195. Scrub of the interior of N. S. Wales, and on the Murray river in Victoria and S. Australia I was for some time disposed to retain this as a distinct species, from its very different aspect, but the examinations of some specimens lead me to suspect that it is rather a state of *H. semipapposum*, induced by circumstances of growth, than even a variety as adopted by Sonder.

SECTION V. OZOTHAMNUS.—Shrubs or rarely undershrubs or herbs. Involucre small, oblong, ovoid or turbinate-campanulate (rarely larger and ovoid-conical), the bracts imbricate, not exceeding the florets, or the inner ones with small coloured radiating tips not much longer than the florets. Female florets few or none. Achenes glabrous or shortly villous. Pappus-bristles simple, often thickened or more denticulate towards the end.

Ozothamnus was originally proposed as a genus by R. Brown, without any detailed enumeration of species, but from the character he gave as well as from his MS. notes, it is evident he assigned different limits to it from those which have been subsequently adopted, for, relying chiefly on the shape of the involucre and small number of florets (under 20), he included *H. ramosum* and excluded *H. reticulatum.* Lessing, working chiefly upon S. African *Helichrysa,* found it necessary to reunite *Ozothamnus* with that genus as a section. De Candolle and others have subsequently adopted Brown's genus, for those shrubby species only which have the habit of *Cassinia,* but as I have been unable to assign any tangible character to the group so limited, I have felt obliged to return to Lessing's views, extending however the limits of the section so as to include the herbaceous species contemplated by Brown, as well as a few others which have neither the hemispherical radiating involucre of *Xerochlæna,* nor the peculiar characters of *Chrysocephalum.*

24. **H. Dockerii,** *F. Muell.* (as *Acanthocladium*). A rigid divaricately branched undershrub, very white with a close dense cottony wool, the smaller branchlets often spinescent. Leaves oblong-lanceolate or almost ovate, acute or obtuse, narrowed at the base but scarcely petiolate, rather thick and flat, rarely above ½ in. long. Flower-heads nearly sessile, solitary or perhaps clustered. Involucre rather broadly ovoid, 3 to 4 lines long, the bracts straw-coloured or pale brown, opaquely scarious, the outer ones ovate and woolly-ciliate, the inner narrow, with glabrous tips not spreading. Florets above 20, as long as the involucre. Achenes glabrous or papillose. Pappus-bristles numerous, fine, more or less barbellate at the end.—*Acanthocladium Dockerii,* F. Muell. Fragm. ii. 156.

N. S. Wales. Sand hills, Darling river, *Beckler.*

F. Mueller, in the flowers he examined, found no tails to the anthers; in those I dissected the tails were rather long but exceedingly fine and difficult to find.

25. **H. argyroglottis,** *Benth.* A divaricately-branched shrub, scarcely woolly except the under surface of the leaves. Leaves very shortly petiolate, oblong or linear, obtuse, ½ to 1 in. long, mostly scabrous above and white underneath. Flower-heads solitary and nearly sessile. Involucre rather narrow, turbinate-campanulate, 6 to 7 lines long without the rays, the outer bracts broadly lanceolate, acute, rigid, with narrow scarious edges, closely appressed, gradually lengthening, the innermost long and narrow, with white radiating tips or laminæ 2 to nearly 3 lines long. Receptacle conical. Florets all hermaphrodite, scarcely exceeding the appressed involucral bracts. Achenes glabrous. Pappus of several fine slightly denticulate bristles.—*Argyroglottis turbinata,* Turcz. in Bull. Mosc. 1851, ii. 84. t. 1; *Conanthodium Drummondii,* A. Gray in Hook. Kew Journ. iv. 273.

W. Australia, *Drummond, 5th Coll. Suppl. n.* 63. Although overlooked by Turczaninow, I found prominent tails to the anthers in this species as in *H. Dockerii.*

26. **H. ramosum,** *DC. Prod.* vi. 181. Herbaceous and said to be annual, but some specimens have a thick woody rhizome, the stems erect, branching, slender but attaining 2 or 3 ft., quite glabrous or with a little deciduous cottony wool. Leaves not numerous, linear-lanceolate or elliptical-oblong, flat, narrowed into a short petiole, the longest often 2 in. long, but mostly smaller and sometimes more numerous and all under ½ in., glabrous or white underneath. Flower-heads small, in little dense corymbs forming a large loose almost leafless panicle. Involucre ovoid, at length broadly campanulate, about 2 lines long, slightly woolly, the bracts numerous, the inner ones with small white or pink spreading tips. Florets from about 20 to

nearly 30, very few of them female. Achenes glabrous. Pappus-bristles not numerous, thickened and denticulate towards the end.—Steetz in Pl. Preiss. i. 470; *H. gracile*, DC. Prod. vi. 181.

W. Australia. King George's Sound and adjoining districts, *R. Brown*, *A. Cunningham*, and others, *Preiss, n.* 26; Swan River and Flinders Range, *Drummond, n.* 112, *Oldfield*, and others, and (with pink involucres and smaller leaves) *Drummond, 4th Coll. n.* 221, *Clarke*, and others.

27. **H. cordatum,** *DC. Prod.* vi. 180. An undershrub with long flexuose reclining or almost climbing branches, closely covered with white cottony wool. Leaves petiolate, the lower ones cordate-ovate, 1 to 2 in. long, losing their wool on the upper side, densely cottony underneath, the upper ones few and small. Flower-heads small and numerous, in little compact corymbs forming a large loose almost leafless panicle. Involucre turbinate-campanulate, about $2\frac{1}{2}$ lines long, woolly-white, the inner and intermediate bracts with small white glabrous spreading tips. Florets about 20, a very few of the outer ones female. Achenes glabrous or papillose. Pappus-bristles scarcely thickened upwards.—Steetz in Pl. Preiss. i. 469.

W. Australia. King George's Sound, *R. Brown* and others, thence to Swan River, chiefly near the sea, *Drummond, n.* 168, *Preiss, n.* 29, and many others, covering the hills at the entrance to Swan River, *Fraser*. There are occasionally a few small scales on the receptacle.

28. **H. obovatum,** *DC. Prod.* vi. 180. Stems (from a woody base?) weak, branching, reclining or flexuose, woolly-white when young, at length glabrous. Leaves on slender petioles, obovate, $\frac{1}{2}$ to 1 in. long, thin and flat, glabrous or cottony-white underneath. Flower-heads small, in a loose irregular leafless panicle. Involucre broadly turbinate-campanulate, scarcely 2 lines long, woolly as well as the peduncles, the bracts not very numerous, the inner ones with very small or scarcely any scarious spreading tips. Florets about 20. Achenes glabrous. Pappus-bristles scarcely thickened upwards. —F. Muell. Fragm. ii. 89.

N. S. Wales. Rocky slopes on the Hastings river, *A. Cunningham*, Clarence river, *Beckler*.

29. **H. Bidwillii,** *Benth.* Stems weak, straggling or flexuose, with more or less of a deciduous cottony wool. Leaves on slender petioles, ovate or ovate-elliptical, mostly acute, $\frac{1}{2}$ to 1 in. long, flat and thin, glabrous or cottony-white, especially underneath. Flower-heads small, in small rather compact panicles terminating leafy branches. Involucre broadly campanulate, about 2 lines long, glabrous or very thinly woolly, the bracts rather numerous, scarious, appressed, the inner ones with very small slightly spreading acute or jagged tips. Florets about 20 or rather more, a few outer ones female. Achenes glabrous. Pappus-bristles serrulate, but scarcely thickened upwards.

Queensland. Wide Bay, *Bidwill.*
N. S. Wales. Macleay river, *Beckler.*
With the foliage nearly of *H. obovatum*, this has the inflorescence and involucres of *H. Becklerii.*

30. **H. Becklerii,** *F. Muell. Herb.* A shrub (or undershrub?) with

slender divaricate branches, tomentose or pubescent when young. Leaves almost sessile, oblong-lanceolate or linear, flat or with recurved margins, about 4 to 8 lines long, glabrous above, hoary or white underneath. Flower-heads small, in small compact panicles terminating leafy branches. Involucre broadly campanulate, nearly 3 lines diameter, the bracts rather numerous, scarious, loosely appressed, without spreading tips. Florets above 20, several of the outer ones female. Achenes papillose-pubescent or glabrous. Pappus-bristles serrulate, but scarcely thickened upwards.—*Ozothamnus Becklerii*, F. Muell. Fragm. i. 183.

N. S. Wales, *F. Bauer;* Hastings river, *Fraser, Leichhardt, Beckler.*

31. **H. diotophyllum,** *F. Muell. Fragm.* v. 150. A shrub with virgate rather slender branches, covered with a loose cottony wool. Leaves almost scale-like, erect, linear-lanceolate, 1 to 2 lines long, acute, with revolute margins expanded at the base into thick rounded auricles. Flower-heads small, in small very compact panicles terminating leafy branches. Involucre broadly campanulate or almost globular, about 2 lines diameter, slightly woolly at the base, the bracts numerous, scarious, appressed, without spreading tips. Achenes shortly hirsute. Pappus-bristles few, barbellate towards the end.

N. S. Wales. Dogwood Creek, *Leichhardt.* With the foliage nearly of *H. baccharoides*, this has the inflorence and involucres nearly of *H. Becklerii.*

32. **H. diosmifolium,** *Less. in Steud. Nom. Bot. ed.* 2. An erect shrub, said to attain sometimes 20 ft., the branchlets minutely viscid-pubescent or tomentose. Leaves narrow-linear with minute points or almost obtuse, rarely exceeding ½ in., the margins revolute and not decurrent, glabrous or hoary-tomentose underneath. Flower-heads small and numerous, in dense terminal corymbs. Involucre nearly globular or broadly campanulate, 2 to nearly 3 lines diameter, the bracts broad, obtuse, concave, loose and very white or tinged with pink but without spreading tips. Florets about 20, a few outer ones sometimes female. Achenes glabrous or papillose. Pappus-bristles serrulate but scarcely thickened upwards.—*Metalasia rosmarinifolia*, Sieb. Pl. Exs.; *Ozothamnus diosmifolius*, DC. Prod. vi. 166.

Queensland. Burnett river, *F. Mueller;* Pine river, *Fitzalan.*

N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown, Sieber, n.* 342, *and Fl. Mixt. n.* 515, and others; Lachlan and Macquarrie rivers, *A. Cunningham;* New England, *C. Stuart;* Macleay, Hastings, and Clarence rivers, *Beckler;* Richmond river, *C. Moore.*

33. **H. adnatum,** *Benth.* A tall heath-like shrub, the branches tomentose and marked with raised glabrous lines, decurrent from the leaves and persistent after they have fallen. Leaves linear, obtuse retuse or with recurved points, the margins decurrent, glabrous or scabrous above, white or tomentose underneath. Flower-heads small and numerous, in a dense terminal corymb. Involucre narrow, about 2 lines long, the bracts obtuse, concave, rather loose and white or straw-coloured, but without spreading tips. Florets about 10 to 12, 1 to 3 of the outer ones sometimes female. Achenes glabrous or papillose. Pappus-bristles few, thickened and denticulate upwards, only 1 or 2 or entirely wanting to the female florets.—*Ozo-*

thamnus adnatus, DC. Prod. vi. 166 (from the character); *O. retusus*, Sond. and Muell. in Linnæa, xxv. 510.

N. S. Wales. Darling river, *Dallachy and Goodwin.*
Victoria. Barren hills, Bacchus Marsh, *F. Mueller;* Wimmera, *Dallachy.*
S. Australia. Mountains on Gawler river, *Behr;* Murray scrub and Light river, towards Mount Remarkable, *F. Mueller.*

Var. *scabra.* Leaves scabrous-pubescent or almost muricate above, cottony-white underneath.—*Ozothamnus scaber*, F. Muell. in Linnæa, xxv. 407, Sond. in Linnæa, xxv. 511.

The peculiar decurrent lines distinguish at once this species from several others both of *Helichrysum* and *Cassinia*, which have an otherwise similar foliage and inflorescence.

34. **H. Cunninghamii,** *Benth.* A heath-like shrub with virgate woolly-tomentose branches. Leaves narrow-linear, mucronate-acute, rather rigid, about ½ in. long, with revolute margins not decurrent, smooth or with a few asperities above, tomentose underneath. Flower-heads small and numerous in compact terminal corymbs. Involucre very narrow, glabrous, pale straw-colour, about 2 lines long, the bracts not numerous, narrow, rigid, and almost acute, without coloured tips. Florets usually 3, without any scales between them. Achenes glabrous. Pappus-bristles slender, not thickened upwards.—*Cassinia Cunninghamii*, DC. Prod. vi. 156.

N. S. Wales. Summit of Mount Dangan on Hunter's River, *A. Cunningham.* Although the involucre is more like that of some *Cassiniæ* than of any *Helichrysum*, the want of any scales on the receptacle (besides the involucral bracts surrounding the florets) prevents the retaining the species in the former genus.

35. **H. reticulatum,** *Less. in Steud. Nom. Bot. ed.* 2. An erect stout shrub of several feet, with thick woolly-white branches. Leaves broadly linear, very obtuse, with closely revolute margins, 1 to 2 in. long, glabrous above with transverse indented reticulations, tomentose underneath. Flower-heads not so small as in the allied species, numerous, in a rather dense terminal corymb. Involucre broadly campanulate, about 3 lines diameter, woolly-tomentose, the bracts numerous, not spreading, the innermost often with minute white tips and some others with scarious ones, or sometimes all woolly to the end. Florets about 20, a few of the outer ones female. Achenes densely villous. Pappus-bristles serrulate and slightly thickened towards the end.—*Chrysocoma reticulata*, Labill. Pl. Nov. Holl. ii. 40. t. 183; *Faustula reticulata*, Cass. (DC.); *Gnaphalium reticulatum*, Spreng. Syst. iii. 471; *Ozothamnus reticulatus*, DC. Prod. vi. 164; Hook. f. Fl. Tasm. i. 202.

Tasmania. Adventure Bay, *Nelson* (in *Herb. R. Brown*); on the rocky shores of the island, *J. D. Hooker.*

36. **H. cinereum,** *F. Muell. Herb.* An erect much-branched shrub of several feet, the branchlets tomentose. Leaves linear, obtuse, rarely exceeding ½ in., with revolute margins, not decurrent, glabrous above, tomentose underneath, sometimes very narrow, sometimes thick and rather broad. Flower-heads small and numerous, in rather dense terminal corymbs. Involucre at first ovoid, at length broadly turbinate, about 3 lines long, the bracts rather numerous, appressed, often almost acute, the innermost without any or with minute scarcely spreading white tips. Florets 15 to 20 or rather

more, a very few of the outer ones female. Achenes papillose. Pappus-bristles serrulate, slightly thickened upwards.—*Chrysocoma cinerea*, Labill. Pl. Nov. Holl. ii. 39. t. 182; *Ozothamnus cinereus*, DC. Prod. vi. 165; Hook. f. Fl. Tasm. i. 203; *O. turbinatus*, DC. Prod. vi. 164.

N. S. Wales. 'Blue Mountains' (but probably rather from the seacoast), *R. Cunningham.*

Victoria. Frequent along the seacoast from the Glenelg river, *Robertson*, to Wilson's Promontory, Lake King and Snowy River, *F. Mueller.*

Tasmania. Kent's group, Bass's Straits, *R. Brown;* northern shores of the colony, *J. D. Hooker.*

37. **H. bracteolatum,** *Benth.* A shrub with densely woolly-tomentose branches. Leaves linear or almost lanceolate, obtuse or nearly so, with revolute margins shortly decurrent on the stem, ¾ to 1½ in. long, glabrous above and sometimes transversely indented, as in *H. reticulatum*, tomentose underneath. Flower-heads nearly as in *H. cinereum*, but in a looser corymb with bracteolate peduncles. Involucre as in that species ovoid-turbinate, about 3 lines long, most of the bracts with very short scarious tips not white. Florets about 15 to 20. Achenes papillose. Pappus-bristles prominently serrulate but scarcely thickened upwards.—*Ozothamnus bracteolatus*, Hook. f. Fl. Tasm. i. 203.

Tasmania. Flinders' Island, *Gunn*, a single specimen. The species requires further elucidation to ascertain how far the characters separating it from *H. cinereum* are constant.

38. **H. cassinioides,** *Benth.* An erect, branching, heath-like shrub, the branches rather slender, tomentose. Leaves narrow-linear, obtuse or with minute recurved points, above ½ in. long, the margins much revolute, not decurrent, glabrous and smooth above, tomentose underneath. Flower-heads small and numerous, in small dense terminal corymbs. Involucre narrow, about 2 lines long, the bracts scarious, concave, appressed, without spreading tips. Florets about 12 to 15. Achenes glabrous. Pappus-bristles scarcely thickened upwards.

Queensland. Keppel Bay and Broad Sound, *R. Brown.* Closely resembles *Cassinia aculeata*, var. *uncata*, but there are certainly no scales between the florets (*Herb. R. Brown*).

39. **H. Gunnii,** *F. Muell. Herb.* A tall shrub, nearly allied to *H. rosmarinifolium*, the branches densely woolly-tomentose. Leaves narrow-linear, mostly obtuse, ¾ to 1½ in. long, with revolute margins, not decurrent, tomentose above when young, at length glabrous, woolly underneath. Flower-heads larger than in *H. rosmarinifolium*, very numerous, in a broad dense terminal compound corymb. Involucre narrow, nearly 3 lines long, the bracts rather numerous, the inner ones with small white radiating tips. Florets, achenes, and pappus of *H. rosmarinifolium.*—*Ozothamnus Gunnii*, Hook. f. Fl. Tasm. i. 205.

Tasmania. Sand-hills by the seashore, *Gunn.* Perhaps a variety of *H. rosmarinifolium.*

40. **H. ledifolium,** *Benth.* Closely allied to *H. rosmarinifolium*, and perhaps a variety, the branches rather stouter, the leaves linear with revolute margins, but more crowded and thicker, rusty-tomentose when young, gla-

brous above and mostly reflexed when old, all under ½ in. long. Flower-heads rather larger than in *H. rosmarinifolia*, but otherwise the inflorescence, involucres, florets, achenes, and pappus quite as in that species.—*Cassinia ledifolia*, DC. Prod. vi. 155; *Ozothamnus ledifolius*, Hook. f. Fl. Tasm. i. 204.

Tasmania. Mountains, at an elevation of 3000 ft., *Fraser* and others; Flinders' Island, *Backhouse*. There are certainly no scales to the receptacle in our specimens.

41. **H. rosmarinifolium,** *Less. in Steud. Nom. Bot. ed.* 2. A handsome shrub, attaining 8 or 9 ft., the branchlets more or less clothed with a short white or rusty tomentum or rarely glabrous. Leaves linear, mostly obtuse, from under ½ in. to above 1 in. long, the margins recurved or revolute, not decurrent, glabrous or scabrous above, more or less tomentose underneath. Flower-heads small and numerous, in dense corymbs, usually terminating numerous small leafy branches forming a large leafy panicle. Involucre narrow, scarcely 2 lines long, the bracts imbricate, obtuse, the innermost with small white radiating tips. Florets varying from 6 to 14, a very few of the outer ones female. Achenes strongly ribbed, papillose. Pappus-bristles denticulate, slightly thickened towards the end.—*Eupatorium rosmarinifolium*, Labill. Pl. Nov. Holl. ii. 38. t. 181; *Petalolepis rosmarinifolia*, Cass. (DC.); *Chrysocoma rosmarinifolia*, Spreng. Syst. iii. 424; *Ozothamnus rosmarinifolius*, DC. Prod. vi. 165; Hook. f. Fl. Tasm. i. 205. t. 54.

Victoria. Australian Alps, Baw-Baw, Mitta-Mitta, Cobberas, Mount Barkly, etc., at an elevation of 4000 to 6000 ft., *F. Mueller*.

Tasmania. Derwent river and Port Dalrymple, *R. Brown*; abundant on the banks of streams in the northern parts of the colony, *J. D. Hooker*.

The following appear to me to be but slight varieties of *H. rosmarinifolium*, which, in a large number of specimens, it becomes impossible distinctly to separate from it:—

Ozothamnus thyrsoideus, DC. Prod. vi. 165, Hook. f. Fl. Tasm. i. 205, with the leaves more glabrous and smooth, and the involucres, especially the radiating tips, rather larger.—Tasmania, with intermediate forms from Victoria.

O. ericæfolius, Hook. f. Fl. Tasm. i. 204, t. 57, with the leaves of the side-branches under ¼ in. long, those on the main branches scarcely ½ in.—Tasmania.

O. purpurascens, DC. Prod. vi. 165, with the involucres, except the white radiating tips, more or less pink or purple.—Tasmania and Victoria.

42. **H. ferrugineum,** *Less. in Steud. Nom. Bot. ed.* 2. A tall shrub, very closely allied to *H. rosmarinifolium*, with the same close white or rust-coloured tomentum on the branches and under side of the leaves. Leaves flatter and broader than in that species, and often acute, linear or linear-lanceolate, varying from ½ to nearly 3 in. long, glabrous above. Flower-heads very numerous and small, in a broad dense terminal compound corymb, not usually so paniculate as in *H. rosmarinifolium*. Involucres, florets, achenes, and pappus as in the fewer-flowered forms of that species, the florets usually under 10 and sometimes only 3 or 4.—*Eupatorium ferrugineum*, Labill. Pl. Nov. Holl. ii. 38. t. 180; *Chrysocoma ferruginea*, Spreng. Syst. iii. 424; *Ozothamnus ferrugineus*, DC. Prod. vi. 165; Hook. f. Fl. Tasm. ii. 206; *Cassinia argophylla*, DC. Prod. vi. 155.

N. S. Wales. Shaded mountains, Illawarra, *A. Cunningham*; New England, *C. Stuart* (with narrower leaves).

Victoria. Port Phillip, *R. Brown*; Yarra river, *F. Mueller, Adamson*; Snowy River, *F. Mueller*; Creswick, *Whan*.

Tasmania. Not uncommon in various parts of the colony, *J. D. Hooker.*
S. Australia. Mount Gambier, *F. Mueller* (with narrow leaves, passing into *H. rosmarinifolium*).

43. **H. antennarium,** *F. Muell. Herb.* An erect, glabrous, much-branched shrub of 3 or 4 ft. Leaves obovate or oblong, very obtuse, ½ to 1 or rarely nearly 1½ in. long, contracted into a short petiole, flat or with slightly recurved margins, coriaceous, pale underneath. Flower-heads small and rather numerous, in dense corymbs. Involucre turbinate-campanulate, about 2 lines long, straw colour, the bracts rather numerous, appressed, the innermost often with very short, scarcely spreading white tips. Florets above 20, a very few outer ones occasionally female. Achenes papillose or hirsute towards the top. Pappus-bristles serrulate and slightly thickened towards the end.—*Swammerdamia antennaria*, DC. Prod. vi. 164; *Ozothamnus antennaria*, Hook. f. Fl. Tasm. i. 203.

Tasmania. Table Mountain, Derwent river, *R. Brown;* Mount Wellington and Western mountains, at an elevation of 3000 to 4000 ft., *J. D. Hooker* and others.

44. **H. obcordatum,** *F. Muell. Herb.* An erect shrub, attaining from 2 to 4 or 5 ft. in height, the branches cottony-white or nearly glabrous. Leaves broadly obovate, very obtuse, narrowed into a very short petiole, under ½ in. and sometimes all under ¼ in. long, flat or with slightly recurved margins, coriaceous, glabrous above, pale or white underneath. Flower-heads small and numerous, in a dense terminal corymb. Involucre narrow, about 2 lines long, straw-coloured, the bracts concave and loosely imbricate, without coloured tips. Florets about 6 to 8 in the original form, a few of the outer ones female. Achenes angular, glabrous or papillose. Pappus-bristles not at all or scarcely thickened upwards.—*Ozothamnus obcordatus*, DC. Prod. vi. 165; Hook. f. Fl. Tasm. i. 202.

Tasmania. Dry hillsides about the Derwent river, *R. Brown, J. D. Hooker.*

Var. *major.* Leaves and flower-heads rather larger, florets about 12.—*Cassinia obovata*, DC. Prod. vi. 155.

N. S. Wales. Twofold Bay, *A. Cunningham;* New England, *C. Stuart.*
Victoria. Mount Sturgeon, *Robertson, F. Mueller;* Grampians, *Wilhelmi;* Naugatta Mountains, Forest Creek, entrance to Genoa river, *F. Mueller.*

45. **H. Backhousii,** *F. Muell. Herb.* A small, erect, much-branched shrub of 1 to 3 ft., the branches slightly tomentose or at length glabrous. Leaves from narrow obovate to oblong-cuneate, more or less narrowed at the base, a few rarely almost oblong-linear, obtuse, under ½ in. long, flat or with slightly recurved margins, coriaceous, glabrous above, pale or white underneath. Flower-heads small, in small dense terminal corymbs. Involucre ovoid, above 2 lines long, pale brown, the bracts woolly-ciliate, appressed, a few of the innermost with small white spreading tips. Florets about 15, a very few of the outer ones female. Achenes glabrous or minutely papillose. Pappus-bristles serrulate and slightly thickened towards the end.—*Ozothamnus Backhousii*, Hook. Fl. f. Tasm. i. 204. t. 54; *Cassinia cuneifolia*, DC. Prod. vi. 155.

Tasmania. Port Arthur, *Backhouse;* Mount Wellington, at an elevation of 3000 ft., *A. Cunningham* and others.

46. **H. cuneifolium,** *F. Muell. Herb.* (as an *Ozothamnus*). A shrub, apparently much taller than *H. obcordatum*, with a denser almost floccose tomentum. Leaves cuneate-oblong, very obtuse, [illegible] to 1½ in. long, flat or with slightly recurved margins, but thinner than in *H. obcordatum*, and the margins often crisped. Flower-heads small and numerous, in large compact corymbs. Involucre narrow, the bracts rather few, the inner ones with white radiating tips, more conspicuous than in *H. Backhousii*. Florets 4 to 6. Achenes pubescent. Pappus-bristles serrulate, slightly thickened towards the end.

Victoria. Snowy river, Latrobe river, and affluents of Genoa river, *F. Mueller.*

47. **H. baccharoides,** *F. Muell. Herb.* An erect, very much-branched shrub, with the habit of *Olearia lepidophylla*. Leaves small, scale-like, erect and closely appressed, ½ to 1 line long, the upper surface concave, but the margins so closely reflexed as to conceal the woolly under surface. Flower-heads small, sessile in dense clusters at the ends of the short branchlets forming long thyrsoid leafy panicles. Involucre very narrow, not 2 lines long, straw-colour, the bracts few, the inner ones with small white scarcely spreading tips. Florets 2 to 4, all hermaphrodite. Achenes papillose. Pappus-bristles rather numerous, scarcely serrulate, but slightly thickened towards the end.—*Baccharis (?) lepidophylla*, DC. Prod. v. 427; *Ozothamnus lepidophyllus*, Hook. f. in Hook. Lond. Journ. vi. 120, not of Steetz; *O. Hookeri*, Sond. in Linnæa, xxv. 509; Hook. f. Fl. Tasm. i. 201. t. 55.

Victoria. Australian Alps, Baw-Baw, Cobberas, Haidinger's Range, at an elevation of 4000 to 6000 ft., *F. Mueller.*

Tasmania. Table Mountain, Derwent river, *R. Brown*; abundant on the mountains throughout the colony, at an elevation of 3000 to 5000 ft., *J. D. Hooker.*

48. **H. lepidophyllum,** *F. Muell. Herb.* A tall, much-branched shrub, the branchlets slender, slightly tomentose or glabrous. Leaves small and scale-like, reflexed and closely appressed, ovate, about ¼ line long, thick, with revolute margins, glabrous above, tomentose underneath. Flower-heads small, in dense terminal corymbs. Involucre obovoid, about 2 lines long, slightly woolly at the base, with broad, concave, loosely imbricate, but not spreading white tips. Florets 8 to 10, all hermaphrodite. Achenes papillose. Pappus-bristles denticulate, thickened towards the end.—*Ozothamnus lepidophyllus*, Steetz in Pl. Preiss. i. 468.

W. Australia. King George's Sound to Swan River, *Drummond*, *Preiss*, *n.* 28; Salt river, and eastward to Cape Arid, *Maxwell.*

49. **H. scutellifolium,** *Benth.* A much-branched shrub, not so slender as *H. lepidophyllum*, and more tomentose. Leaves as in that species, small, scale-like, closely reflexed, ovate, about ½ line long, thick with revolute margins, tomentose on both sides or glabrous above. Flower-heads small, sessile in little clusters of 3 to 5, at the ends of the branches. Involucre obovoid, about 2 lines long, the bracts few, pale brown, without spreading tips. Florets about 15 to 18, of which several outer ones slender and female, all remarkably dilated at the base. Achenes papillose. Pappus-bristles barbellate, slightly thickened towards the end. *Ozothamnus scutellifolius*, Hook. f. Fl. Tasm. i. 202, t. 56.

Tasmania, *Oldfield;* Port Arthur, *Burnett.*

50. **H. pholidotum,** *F. Muell. Herb.* A tall shrub, with numerous slender virgate branchlets, almost destitute of wool. Leaves small, scale-like, erect and closely appressed, lanceolate, about 1 line long, thick, concave above, convex underneath, without recurved margins. Flower-heads small and numerous, in a dense terminal corymb. Involucral bracts mostly with white concave erect appendages.—*Ozothamnus pholidotus* or *Cassinia pholidota,* F. Muell. Fragm. ii. 131.

Victoria. Desert around Lake Hindmarsh, *Dallachy, L. Morton.* The specimens are in young bud only, and the number and structure of the florets cannot be very accurately ascertained, but I see no trace of receptacle-scales between them.

51. **H. lycopodioides,** *Benth.* A small glabrous shrub, with erect branchlets, mostly arising from under the old clusters of flower-heads. Leaves small and erect, but not closely appressed, oblong, or broadly linear, obtuse, not exceeding 2 lines in length, coriaceous, concave above, convex underneath, without recurved margins. Flower-heads small, in a dense terminal cluster or compound head. Involucre ovoid, about 2 lines long, the bracts rather numerous, several of the inner ones with brown or purplish, broad, concave but not spreading tips. Florets above 20, a few of the outer ones female. Achenes papillose. Pappus-bristles barbellate and thickened towards the end.—*Ozothamnus lycopodiodes,* Hook. f. in Hook. Lond. Journ. vi. 119; and Fl. Tasm. i. 201. t. 57.

Tasmania. Sugar-loaf, *Backhouse,* Apsley river, *Burnett,* both near Great Swanport.

52. **H. selaginoides,** *F. Muell. Herb.* A glabrous, much-branched, spreading herb or undershrub, about 1 ft. high. Leaves small, spreading or almost recurved, decurrent at the base, obtuse, mostly about 1 line long, thick, convex or flat underneath, without recurved margins. Flower-heads small, sessile in terminal clusters. Involucre rather narrow, about 2 lines long, straw-colour, the bracts not numerous, the innermost with short broad white spreading tips. Florets 8 to 10 or rarely 12, all hermaphrodite. Achenes papillose. Pappus-bristles not numerous, very slightly thickened and barbellate towards the end.—*Ozothamnus selaginoides,* Sond. and Muell. in Linnæa, xxv. 510; Hook. f. Fl. Tasm. i. 201. t. 56.

Tasmania. Table Mountain, west of Oatland, at an elevation of 3000 ft., *C. Stuart, Gunn, Oldfield.*

76. WAITZIA, Wendl.

(Viraya, *Gaudich.;* Morna, *Lindl.;* Pterochæte, *Steetz.*)

Involucre broadly turbinate-campanulate, hemispherical or almost globular, the bracts imbricate in many rows, all coloured and petal-like, the inner ones on narrow claws, spreading or appressed, but rarely and only shortly radiating. Receptacle flat, without scales. Florets numerous, all hermaphrodite, tubular, 5-toothed. Anthers with very fine tails. Style-branches nearly terete, truncate or with very short cones, almost capitate. Achenes somewhat compressed, glabrous or papillose, terminating in a slender beak (rarely very short). Pappus of capillary bristles usually cohering at the base, simple

barbellate or plumose.—Herbs, usually annual. Leaves alternate, linear. Flower-heads in terminal corymbs, or rarely in oblong leafy racemes. Laminae of the involucral bracts usually serrate-ciliate at the base.

The genus is limited to Australia. It is closely allied to *Leptorhynchos*, *Helichrysum*, and *Helipterum*, differing from the first in the involucre and habit, in the very long beak to the achene in some species, and in the plumose pappus in others; and from *Helichrysum* and *Helipterum* in the beaked achenes. Steetz found no tails to the anthers; I have found exceedingly fine ones in all the species.

Involucre broadly turbinate-campanulate, the bracts loosely imbricate or spreading, the outer passing gradually into the inner. Beak of the achene very long. Pappus-bristles scabrous or barbellate at the base only.
- Involucral bracts (yellow white or pink) narrow and acutely acuminate, the outer ones descending along the peduncle. Corymbs compact . . . . 1. *W. corymbosa.*
- Involucral bracts obtuse or acute, not acuminate, rarely any on the peduncle, usually with a few floral leaves.
  - Involucres golden-yellow, distinctly exceeding the florets. Corymbs compact . . . . 2. *W. aurea.*
  - Involucres white or pink, scarcely exceeding the florets. Corymbs loose . . . . 3. *W. nivea.*

Involucre broadly hemispherical, about ½ in. diameter. Beak of the achene short or long. Pappus-bristles strongly barbellate . . 4. *W. Steetziana.*

Involucre nearly globular, the inner row of bracts more distinctly radiating than the others. Pappus-bristles plumose.
- Peduncles long. Beak much longer than the achene . . . . . 5. *W. podolepis.*
- Peduncles short. Beak much shorter than the achene . . . . 6. *W. paniculata.*

1. **W. corymbosa,** *Wendl. Coll. Pl.* ii. 13. *t.* 42, *not of Steetz.* An erect annual of 1 to 2 ft., scabrous-pubescent or hoary but scarcely woolly. Leaves linear, the lower ones often 2 to 3 in. long, the margins revolute, stem-clasping at the base. Flower-heads usually numerous in a dense terminal corymb. Involucres about ¾ in. diameter, varying in colour from a pale to a dark yellow, white or bright pink, the intermediate bracts with a very slender claw and lanceolate laminae very acutely acuminate, sometimes 3 or 4 lines long, the outer with gradually shorter broader claws and smaller laminae passing gradually into small scales more or less descending on the peduncle, 2 or 3 innermost rows of bracts with linear broader scarious claws without any or with very small laminae. Florets rather shorter than the involucres. Achenes produced into a slender beak several times longer than the achene itself. Pappus-bristles fine and slightly scabrous, slightly united at the base.—Hook. Bot. Mag. t. 5443; *W. acuminata*, Steetz in Pl. Preiss. i. 453; Regel, Gartenfl. t. 401; *W. discolor*, Turcz. in Bull. Mosc. 1851, i. 194.

Victoria. Wimmera and Murray river, *Dallachy.*

S. Australia. Pine forests and scrub to the N.E. of Lake Gairdner, *F. Mueller*; Lake Gillies, *Burkitt*

W. Australia. Swan River, *Drummond, 1st Coll., 4th Coll., n.* 198, *Preiss*; Kalgan, Murray, and S. Hutt rivers, *Oldfield*; Salt Creek, *Maxwell.*

Wendland's figure is an excellent representation of the pink variety, Regel's of the yellow one. The figure in the 'Botanical Magazine' also appears to represent the true *W. corymbosa*, although the erroneous synonymy is copied from Steetz. The figure of *Morna nitida*, Lindl. Bot. Reg. t. 1941, perhaps also rather represents this species than *W. aurea.*

2. **W. aurea,** *Steetz in Pl. Preiss.* i. 452. An erect annual with the habit and linear scabrous-pubescent or almost glabrous leaves of *W. corymbosa.* Flower-heads rather larger and fewer in a looser corymb. Involucre golden-yellow or tinged with brown, the bracts gradually passing from the sessile outer to the stipitate inner or intermediate ones, but more rigid, obtuse or acute but not acuminate, distinctly exceeding the florets, not descending along the peduncle but usually, especially when young, closely surrounded by 2 or 3 small linear floral leaves. Achenes with the long slender beak and simple pappus of *W. corymbosa*, except that the bristles are sometimes barbellate or ciliate-plumose quite at the base.—*Leptorhynchus aureus*, Benth. in Hueg. Enum. 64; DC. Prod. vi. 161; *Morna nitida*, Lindl. Bot. Reg. t. 1941 (?) (referable perhaps to *W. corymbosa*).

W. Australia. Swan River and adjoining districts, *Huegel, Drummond, 1st Coll. n.* 333, *and 5th Coll. n.* 381, *Preiss, n.* 2, 4, 5, 8, and others; Blackwood and Bowes rivers and Champion Bay, *Oldfield*; Roebuck Bay, *Martin*; South coast, *Baxter*; S.W. Bay and Middle Mount Barren, *Oldfield.*

3. **W. nivea,** *Benth.* An erect annual with linear scabrous-pubescent or almost glabrous leaves and rather large flower-heads usually few in a loose corymb as in *W. aurea*, the involucres surrounded by a few floral leaves as in that species of which it may be a variety, with the involucral bracts of a pure white or pink or very rarely with a very pale yellowish tinge, they are also not rigid, more frequently acute, though not acuminate as in *W. corymbosa*, the almost herbaceous linear claws are more conspicuous, and the florets are longer in proportion to the involucre. Achenes and pappus as in *W. aurea.* —*Morna nivea*, Lindl. Bot. Reg. 1838, t. 9; *Leptorhynchus suaveolens*, Benth. in Hueg. Enum. 64; DC. Prod. vi. 160; *Waitzia odontolepis*, Turcz. in Bull. Mosc. 1851, ii. 77; *W. corymbosa*, Steetz in Pl. Preiss. i. 450, not of Wendland.

W. Australia. King George's Sound, *R. Brown* and others, and thence to Swan River, *Drummond, 1st Coll. n.* 334; *5th Coll. n.* 382, 383; *Preiss, n.* 12, 13, and others; and Murchison river, *Oldfield, Drummond, 6th Coll. n.* 158.

Helichrysum rigidulum, DC. Prod. vi. 193, described from a fragment communicated by Sweet, which I have not seen, is probably this species, of which a single flower-head, without examining the achene and pappus, might be taken almost for that of *Helichrysum adenophorum.*

4. **W. Steetziana,** *Lehm. in Pl. Preiss.* i. 454. An erect annual, more slender than the preceding species and almost always under 1 ft. high, glabrous or with a little loose wool. Flower-heads solitary or in loose corymbs smaller than in the preceding species. Involucres hemispherical, about ½ in. diameter, varying from a pure white to a pale or bright yellow, the bracts rather broad, obtuse or scarcely acute, without external floral leaves, passing gradually from the outer sessile to the inner ones on rather broad claws. Florets much smaller than in *W. nivea.* Achenes very papillose, contracted into a slender beak, usually very short at the time of flowering, more or less lengthened when the achene is ripe, sometimes to twice or three times its own length. Pappus bristles short, strongly barbellate or shortly plumose. —*W. tenella*, Hook. Bot. Mag. t. 5342, and *W. dasycarpa*, Turcz. in Bull. Mosc. 1851, ii. 77 (both with long beaks to the achenes); *Leptorhynchus*

citrinus, Benth. in Hueg. Enum. 64; DC. Prod. vi. 161; *Waitzia citrina*, Steetz in Pl. Preiss. i. 454, and *W. sulphurea*, Steetz, l. c. 453 (with the involucres more or less yellow); *W. brevirostris*, Steetz in Pl. Preiss. i. 451 (with short beaks to the achenes and white involucres).

W. Australia. Swan River and adjoining districts, *Drummond*, 1*st Coll. n.* 336, 337; 5*th Coll. Suppl. n.* 65; *Preiss, n.* 6, 7, 9, 10, 15, and others; Murchison river, *Oldfield;* Stirling range, Gairdner and Salt rivers, *Maxwell.*

The species, in habit, foliage, and general form of the involucres, often so closely resembles *Helipterum Cotula*, that it is only to be distinguished by the beak of the achene and by the outer involucral bracts as petal-like as the inner ones instead of being more rigid and brown. The length of the beak to the achene appears to be very variable and sometimes short. even in the ripe achene, but in general it is short at the time of flowering and lengthens considerably afterwards.

5. **W. podolepis,** *Steetz in Pl. Preiss.* i. 450. An erect simple annual. Leaves linear, 1 to 2 in. long, hoary-tomentose (*Gaudichaud*) or glabrous (*Sonder*). Flower-heads in the upper axils on peduncles longer than the leaves, forming a loose corymb or short raceme. Involucre described as hemispherical, figured rather as broadly campanulate, about ½ in. diameter, the outer bracts white and appressed, the inner row with short spreading laminæ of a brown-yellow (*Gaudichaud*), all pure white (*Sonder*). Achenes with a slender beak much longer than themselves. Pappus-bristles strongly barbellate. *Viraya podolepis*, Gaudich. in Freyc. Voy. Bot. 466. t. 89; *Leptorhynchus podolepis*, DC. Prod. vi. 160; Sond. in Linnæa, xxv. 501.

W. Australia. Sharks' Bay (*Gaudichaud*). I have seen no plant answering to the description and figure. It seems to partake in some respects of the characters of *W. Steetziana*, in others of *W. paniculata*. Sonder, who saw a specimen at Berlin, says it is a *Leptorhynchus*, not a *Waitzia*, but he does not say on what character he relies for distinguishing the two genera. The involucre, achene and pappus figured are certainly those of *Waitzia* not of a *Leptorhynchus*.

6. **W. paniculata,** *F. Muell. Herb.* An erect woolly-tomentose annual rarely exceeding 6 in. Leaves oblong-spathulate or the upper ones linear, soft. Flower-heads nearly sessile on very short axillary branches, forming an oblong dense leafy panicle or raceme. Involucre broadly ovoid or almost globose, of a pale straw-colour, about 3 lines diameter, the scarious ciliate bracts imbricate, the outer ones appressed, the intermediate ones (about 1 row) with flat claws and small oblong spreading laminæ, the innermost with narrow claws and very small ciliate-fringed laminæ. Florets 5 to 20, small. Achenes strongly papillose, with a short slender beak. Pappus-bristles 12 to 15, plumose.—*Pterochæte paniculata*, Steetz in Pl. Preiss. i. 456.

W. Australia. King George's Sound, *R. Brown* and others, and thence to Swan River, *Drummond*, 5*th Coll. n.* 358, *Preiss, n.* 35, and others; Murchison river, *Oldfield.*

77. HELIPTERUM, DC.

(Pteropogon, *DC.;* Rhodanthe *and* Xyridanthe, *Lindl.;* Anisolepis *and* Hyalosperma, *Steetz;* Triptilodiscus, *Turcz.;* Acroclinium, Monencyanthes *and* Dimorpholepis, *A. Gray;* Duttonia *and* Cassiniola, *F. Muell.*)

Involucre from broadly hemispherical to narrow-ovoid or cylindrical, the bracts imbricate in several rows, either entirely or only their laminæ scarious or petal-like, more or less spreading or appressed. Receptacle flat, convex or conical, without scales, and in the Australian species without bristles or fringed pits. Florets in the Australian species hermaphrodite tubular and 5- rarely 4-toothed, or very rarely a few in the circumference female, slender but not longer than the others, 2- to 4-toothed, several in the centre frequently sterile. Anthers with fine tails. Style-branches nearly terete, truncate. Achenes angular terete or somewhat flattened, very rarely contracted at the top but not distinctly beaked, glabrous, papillose or more frequently densely silky-villous. Pappus of capillary or very rarely dilated and almost scale-like bristles, finely plumose-ciliate from the base, those of the female florets or of the central sterile ones sometimes fewer or wanting.—Herbs frequently annual, sometimes perennial, or very rarely slender divaricate shrubs with leafy stems, clothed with cottony wool or nearly glabrous. Leaves alternate or the lower ones very rarely opposite, entire. Florets yellow, the laminæ of the involucral bracts usually white yellow brown or pink, often varying in all these colours with intermediate shades in the same species.

A considerable genus, but confined to South Africa and Australia, the species of each of the two regions all endemic. It differs from *Helichrysum* solely in the plumose pappus, and, although annual duration, more scarious outer involucral bracts, and some other minor characters are more prevalent in *Helipterum* than in *Helichrysum*, yet there are several species in each genus closely allied to corresponding ones in the other, and the section *Lawrencella* of *Helichrysum* is an approach, both in habit and in the prominently barbellate pappus-bristles, to *Helipterum*; the species of each genus are, however, numerous both in Australia and South Africa, and the character is not difficult to appreciate, it may therefore be convenient to retain the two as distinct genera. Two species, *H. pyrethrum* and *H. dimorpholepis*, have the pappus bristles dilated towards the base, tending towards the scales of *Rutidosis* but with a very different involucre. Several S. African species have the pits of the receptacle fringed with short bristles. The genus is also closely connected with *Waitzia* through *W. Steetziana*, and with the *Angianthea* through *Cephalipterum*, which is very nearly allied to *Helipterum condensatum*.

SECTION I. **Euhelipterum.** *Involucre broadly hemispherical, with or without radiating petal-like laminæ to the inner or intermediate bracts.*

Achenes villous with long silky hairs.

Receptacle flat. Involucres with radiating laminæ.

Outer bracts thinly scarious or petal-like, inner petal-like with narrow claws. Leaves broad, stem-clasping . . . 1. *H. Manglesii.*

Outer bracts brown, scarious, inner with coloured laminæ and broad claws. Leaves narrow.

Pappus with a terminal tuft of compact hairs. Annual. Rays white or pink . . . . 2. *H. roseum.*

Pappus equally plumose.

Perennial. Involucral ray white . . . . 3. *H. anthemoides.*

Annual. Involucral ray yellow . . . . 4. *H. polygalifolium.*

Receptacle conical. Involucres with radiating laminæ and broad claws.

Pappus with a terminal tuft of compact hairs.

Radiating involucral laminæ reddish . . . . 5. *H. rubellum.*

Radiating involucral laminæ metallic-green when dry . . 6. *H. chlorocephalum.*

Pappus equally plumose. Radiating involucral laminæ white 7. *H. floribundum.*

Pappus-bristles dilated and scale-like, plumose-ciliate. Radiating involucral laminæ white. Leaves small . . . 8. *H. pyrethrum.*

Receptacle flat or convex, honeycombed. Involucral bracts with scarious tips, scarcely radiating.

Involucre hemispherical, the outer bracts small and scarious . . . 9. *H. heteranthum.*
Involucre broadly campanulate, the outer bracts foliaceous though thin . . . *Podotheca fuscescens.*
Achenes glabrous or papillose.
Outer bracts few, sessile, intermediate with subulate claws and radiating petal-like laminæ.
Outer bracts subulate . . . 10. *H. stipitatum.*
Outer bracts broad . . . 11. *H. incanum.*
Outer bracts brown, scarious or coloured, intermediate with broad claws and radiating petal-like laminæ.
Outer bracts wholly scarious or petal-like . . . 12. *H. Cotula.*
Outer bracts with a lanceolate rigid although coloured centre. Achenes much compressed . . . 13. *H. hyalospermum.*

(See also the section *Lawrencella* of *Helichrysum*, in which the pappus is almost plumose, and *Rutidosis Brownii*, in which the pappus-scales are almost divided into bristles.)

SECTION II. **Pteropogon.** *Involucres ovoid, turbinate-campanulate or cylindrical, the outer bracts appressed, scarious or rigid, the intermediate or inner with or rarely without radiating petal-like laminæ or tips. Achenes villous. Florets rarely above* 12.

Flower-heads small with conspicuous rays, in compact terminal corymbs. Achenes shortly hirsute.
Almost all the bracts with white laminæ as long as or longer than the claws . . . 14. *H. condensatum.*
Laminæ of the inner bracts shorter than their claws, those of the outer ones minute or none.
Involucre ovoid-turbinate, the laminæ white . . . 15. *H. polyphyllum.*
Involucre cylindrical, the laminæ yellow . . . 16. *H. Humboldtianum.*
Flower-heads on long peduncles or loosely corymbose, with conspicuous rays. Achenes densely silky-villous.
Outer involucral bracts with linear green tips.
Involucres cylindrical, the rays as long as the outer bracts, linear tips squarrose. Corymb rather compact . . . 17. *H. involucratum.*
Involucres turbinate-campanulate, the rays as long as the outer bracts, linear tips erect . . . 18. *H. tenellum.*
Involucres ovoid, the rays not half so long as the outer bracts . . . 19. *H. gracile.*
Outer involucral bracts with obtusely scarious tips.
Glabrous. Flower-heads on long peduncles. Involucres ovoid . . . 20. *H. strictum.*
Cottony. Flower-heads loosely corymbose. Involucres broadly turbinate . . . 21. *H. corymbiflorum.*
Flower-heads nearly sessile. Involucres narrow.
Dwarf branching plants, the flower-heads in an irregular leafy corymb. Involucres with very small white laminæ.
Cottony. Florets 10 to 15 . . . 21. *H. corymbiflorum* var.
Nearly glabrous. Florets 4 to 6 . . . 22. *H. pygmæum.*
Stems ½ to 1½ ft. high. Flower-heads very small and numerous in an oblong or globular spike-like leafless panicle. No radiating tips . . . 23. *H. spicatum.*

SECTION III. **Monencyanthes.** *Involucres ovoid, cylindrical or campanulate, the bracts scarious or coloured without any or with very minute scarious radiating tips. Achenes glabrous or papillose. Flower-heads often very small.*

Flower-heads in dense corymbose clusters almost contracted into heads.
Erect cottony herb of ½ to 1½ ft. Flower-heads small and numerous. Involucral bracts very woolly inside at the base.

Florets 2 to 4 . . . . 24. *H. moschatum.*
Slender divaricate undershrub or shrub. Flower-heads few.
Involucral bracts ciliate. Florets 15 to 20 . . . . 25. *H. pterochætum.*
Flower-heads in loose leafless corymbs or panicles. Involucres small, narrow, scarious, coloured. Florets 10 to 15.
Leaves linear or lanceolate, acute. Corollas dilated upwards.
Involucres all pedicellate, under 2 lines long. No radiating tips . . . . 26. *H. polycephalum.*
Involucres mostly sessile or nearly so, about 2 lines long, with minute scarious radiating tips . . . . 27. *H. corymbosum.*
Leaves linear obtuse. Corollas very slender. Involucres without radiating tips . . . . 28. *H. læve.*
Flower-heads singly sessile within the floral leaves. Small annuals. Florets above 20.
Plant of 1 to 1½ in. Involucres campanulate. Pappus-bristles about 10, plumose, not dilated . . . . 29. *H. exiguum.*
Plant of 3 to 6 in. Involucres broadly ovoid. Pappus-bristles of the perfect florets about 5, dilated and almost scale-like . . . . 30. *H. dimorpholepis.*

(*Olearia conocephala*, p. 480, has homogamous flower-heads and a plumose pappus, but the involucre is less scarious than in *Helipterum*, and the style different.)

SECTION I. EUHELIPTERUM.—Involucre broadly hemispherical, with or rarely without radiating petal-like laminæ to the inner or intermediate bracts.

1. **H. Manglesii,** *F. Muell. Herb.* An erect glabrous corymbosely-branched annual attaining 1 to 2 ft. Leaves ovate-oblong or broadly lanceolate, clasping the stem with rounded auricles. Flower-heads showy on long peduncles bearing a few scarious scales. Involucre hemispherical, when fully out the outer bracts sessile and scarious, the inner ones with a narrow claw and oblong radiating petal-like lamina ¼ to ½ in. long, varying from a pale to a rich pink and sometimes deep purple at the base. Receptacle flat. Florets short, all hermaphrodite, yellow or purple. Achenes densely woolly-hairy. Pappus of 15 to 20 equally plumose bristles.—*Rhodanthe Manglesii*, Lindl. Bot. Reg. t. 1703; Bot. Mag. t. 3483, 5283, 5290; Sweet, Brit. Fl. Gard. ser. 2. t. 295; Steetz in Pl. Preiss. i. 447.

W. Australia. Swan River, *Drummond*, 1*st Coll.*, *also* 5*th Coll. n.* 383; near Woodbridge, *Preiss, n.* 49; Kalgan river and Champion Bay, *Oldfield;* Salt river, *Maxwell.*—The species varies very much in the size of the flower-heads.

2. **H. roseum,** *Benth.* An annual with erect or ascending simple or slightly branched stems from under 1 ft. to nearly 2 ft. long, glabrous or nearly so. Leaves linear, acute or almost obtuse, the upper ones few and small, the lower ones sometimes shorter and more obtuse. Flower-heads large, solitary, terminal. Involucre hemispherical, the outer scarious bracts sessile, short, tinged with brown, passing gradually into the inner ones with broad linear claws and radiating petal-like laminæ often ½ in. long, varying from a bright pink to pure white. Receptacle flat. Florets all hermaphrodite, the inner ones often sterile. Achenes densely woolly-villous. Pappus of 10 to 15 plumose bristles, terminating in a dense brush, formed of cilia closer packed and deeper coloured but not longer than the others.—*Acroclinium roseum*, Hook. Bot. Mag. t. 4801.

W. Australia. Murchison river, *Oldfield, Drummond*, 6*th Coll. n.* 157.

3. **H. anthemoides,** *DC. Prod.* vi. 216. Rootstock perennial, with numerous erect simple rather slender stems, rarely much above 1 ft. high and often short, glabrous. Leaves linear, often rather crowded, mostly ½ in. long, rarely linear-lanceolate and longer, glabrous and smooth or more frequently marked with impressed dots. Flower-heads solitary. Involucre hemispherical, spreading to about ¾ to 1 in. diameter, including the ray, the outer bracts short, broad, scarious, tinged with brown, the inner with broad scarcely ciliate claws and radiating petal-like laminae 3 to 4 lines long, of a pure white. Receptacle flat. Florets all hermaphrodite. Achenes densely silky-hairy. Pappus-bristles 15 to 20, equally plumose.—Hook. f. Fl. Tasm. i. 215. t. 61; *Helichrysum anthemoides*, Sieb. in Spreng. Syst. iii. 484; *Helipterum punctatum*, DC. Prod. vi. 216.

Queensland, *Bowman*; near Mount Faraday, *Mitchell*; head of the Gwydir, *Leichhardt.*

N. S. Wales. Port Jackson to the Blue Mountains, *R. Brown*, *Sieber*, *n.* 344, and others; New England, *C. Stuart*; Richmond river, *Fawcett*; Macquarrie river, *Fraser*, *A. Cunningham.*

Victoria. Port Phillip, *Gunn*; Grampians, *Wilhelmi*; Wimmera, *Dallachy.*

Tasmania. Derwent river, *R. Brown*; Formosa, Western Mountains, Launceston, etc., *Gunn* and others.

S. Australia. Near Adelaide, *Whittaker*; Mount Remarkable, *F. Mueller.*

4. **H. polygalifolium,** *DC. Prod.* vi. 216. A glabrous annual branching at or near the base, ascending or erect, ½ to 1 ft. high. Lower leaves oblong-spathulate or linear-cuneate, the upper ones linear-lanceolate and small. Flower-heads solitary. Involucre hemispherical, above 1 in. diameter including the ray, the outer short broad scarious bracts tinged with brown, inner ones with a broad slightly woolly-ciliate claw and spreading petal-like lamina, often ½ in. long, of a pale or bright yellow. Receptacle flat. Florets all hermaphrodite. Achenes densely silky-villous. Pappus-bristles 15 to 20, equally plumose with long fine cilia, not tufted at the end.—*H. diffusum*, DC. Prod. vi. 216.

N. S. Wales. Molle's Plains, Lachlan river, and Peel's Range, *Fraser*, *A. Cunningham*; Darling and Lachlan rivers, *Victorian and other Expeditions.*

S. Australia. Murray river, *F. Mueller*; Venus and Streaky bays, *Warburton.*

5. **H. rubellum,** *Benth.* An annual with simple rather slender stems of 6 to 9 in., more or less glandular-pubescent. Flower-heads solitary. Involucre hemispherical, about ½ in. diameter without the ray, the outer bracts ovate, scarious, tinged with brown, the inner with rather broad scarious claws and spreading petal-like laminae, about 3 lines long, of a pale or rather dark pink. Receptacle conical. Florets all hermaphrodite, the inner ones usually sterile. Achenes densely silky-villous. Pappus of the outer perfect achenes of about 20 very plumose bristles, the upper short cilia condensed into a small tuft. A few inner achenes abortive, with a reduced pappus.—*Acroclinium rubellum*, A. Gray in Hook. Kew Journ. iv. 271.

W. Australia, *Drummond*, *n.* 347, *Roe.* I have not succeeded in finding any tails to the anthers in this species, but may have overlooked them if exceedingly fine.

6. **H. chlorocephalum,** *Benth.* An annual with numerous mostly simple stems of ½ to 1 ft., glabrous or nearly so. Leaves linear or slightly

spathulate, rarely above ½ in. long, the upper ones few and small. Flower-heads terminal. Involucre hemispherical, about ½ in. diameter without the ray, the outer short scarious bracts tinged with brown, the inner ones with scarious claws and radiating petal-like laminæ, 3 to 4 lines long, of a metallic green or yellowish-brown colour when dry (perhaps yellowish when fresh). Receptacle conical. Florets all hermaphrodite, the inner ones sterile. Achenes densely villous. Pappus-bristles 10 to 15, plumose, the upper short cilia of each bristle condensed in a terminal tuft, usually deeper coloured than the rest of the pappus, the inner achenes abortive with a reduced pappus.—*Schœnia chlorocephala*, Turcz. in Bull. Mosc. 1851, i. 193; *Acroclinium multicaule*, A. Gray in Hook. Kew Journ. iv. 271.

W. Australia, *Drummond, 4th Coll. n.* 199. This may prove to be a variety of *H. rubellum.*

7. **H. floribundum,** *DC. Prod.* vi. 217. Stems erect and nearly simple when flowering the first year, at length diffuse, much-branched and woody at the base, the branches ascending from a few inches to above 1 ft. high, glabrous or loosely woolly. Leaves linear or rarely linear-lanceolate, acute. Flower-heads solitary on each branch, but the upper branches often numerous and paniculate. Involucre hemispherical, rather smaller than in *H. anthemoides*, the bracts all white and petal-like, the outer ones short and sessile, passing into the inner ones with a scarious claw and radiating lanceolate lamina of 3 lines or more. Receptacle hemispherical or conical. Florets all hermaphrodite. Achenes densely silky-villous. Pappus of 7 to 10 rigid equally plumose bristles.—*H. chionolepis*, F. Muell. in Linnæa, xxv. 416.

N. S. Wales. Molle's Plains, *Fraser;* Darling and Lachlan rivers, *Victorian and other Expeditions;* between Stokes Range and Cooper's Creek, *Wheeler.*

S. Australia. Flinders Range, Cudnaka, *F. Mueller;* Wills' Creek, *Howitt's Expedition;* Mount Searl, *Warburton.*

Var. *Stuartianum.* Rather taller; flower-heads larger, the outer bracts assuming a straw-colour.—*H. Stuartianum*, Sond. in Linnæa, xxv. 518.—Murray river, *F. Mueller.*

8. **H. Pyrethrum,** *Benth.* An erect glabrous simple or slightly-branched annual of 6 to 8 in., the stem thickened at the base. Leaves lanceolate or linear but small and almost scale-like. Flower-heads solitary on the branches. Involucre hemispherical, 2 to 3 lines diameter without the ray, the outer bracts few short and scarious, passing into the upper stem-leaves, the inner ones with short brown rigid claws and radiating petal-like laminæ, spreading to ¾ in. diameter, pure white or tinged with pink. Receptacle conical. Florets all hermaphrodite, the inner ones probably sterile. Achenes densely silky-villous. Pappus of 10 to 15 plumose-ciliate bristles, more or less dilated scale-like and united at the base or sometimes to the middle.—*Anisolepis pyrethrum*, Steetz in Pl. Preiss. i. 447.

W. Australia. Swan River, *Preiss, n.* 14, *Drummond, 5th Coll. n.* 351. The pappus is rather variable, approaching that of *Rutidosis*, but the habit and involucre are totally unlike those of any species of that genus.

9. **H. heteranthum,** *Turcz. in Bull. Mosc.* 1851, i. 198. An erect annual of 6 in. to 1 ft., scabrous-pubescent and somewhat viscid, branching

and leafy near the base. Lower leaves petiolate, oblong or lanceolate, upper ones small and linear. Flower-heads solitary on long almost leafless peduncles. Involucre hemispherical, 4 to 6 lines diameter, the outer bracts broad, short and scarious, the inner with broad rigid claws and small scarious scarcely spreading laminæ. Receptacle slightly convex, prominently honeycombed. Florets all hermaphrodite, the central ones sterile. Achenes densely silky-villous. Pappus of about 20 rigid equally plumose bristles.—*H. discoideum*, A. Gray in Hook. Kew Journ. iv. 231; *H. anactinum*, F. Muell. Fragm. iii. 137.

W. Australia, *Drummond*, *n.* 96, *4th Coll. n.* 214, *5th Coll. n.* 374; Champion Bay, *Oldfield.*

The habit recalls sometimes that of *Podolepis Lessoni*, but it is at once known by the short florets, the villous achenes, and plumose pappus.

Var. *majus.* Stems 1 to 1½ ft. high. Lower leaves 2 to 3 in. long. Flower-heads nearly 1 in. diameter.—Between Moore and Murchison rivers, *Drummond, 6th Coll. n.* 152.

10. **H. stipitatum,** *F. Muell. Herb.* Probably perennial, loosely woolly-hairy, only the branches seen. Leaves linear, stem-clasping, 1 to 2 in. long, flaccid. Flower-heads rather large, on long peduncles, leafless except a few linear bracts, the upper ones with rigid coloured points. Involucre hemispherical, above ½ in. diameter without the ray, a few of the outer bracts subulate, coloured and glabrous, passing into the upper bracts of the peduncle, the inner ones very numerous with very narrow rigid glandular claws of about 3 lines, and ovate radiating petal-like laminæ of about 2 lines long, of a bright yellow, a few of the innermost smaller, with very small laminæ. Receptacle flat. Florets numerous, all hermaphrodite. Style-branches tipped with a prominent cone. Achenes glabrous or papillose. Pappus-bristles rather shortly plumose.—*Helichrysum stipitatum*, F. Muell. Fragm. iii. 133.

S. Australia. Finke river, *M'Douall Stuart's Expedition.* The species is evidently allied to *H. incanum*, but known at once by the subulate outer involucral bracts.

11. **H. incanum,** *DC. Prod.* vi. 215. A densely tufted perennial with ascending or erect simple stems or branches of 6 in. to 1 ft., woolly-white as well as the foliage. Leaves crowded at the base of the stems, from narrow-linear to linear-oblong, often 2 to 4 in. long, the upper ones smaller and distant. Flower-heads large on leafless peduncles. Involucre hemispherical, spreading to 1½ in. diameter, the bracts all petal-like but rigid, the outer ones short and sessile, the inner with linear or subulate claws, glandular or woolly-ciliate, and radiating laminæ 4 to 5 lines long, of a pure white or tinged with pink or brown or passing into a pale or bright yellow. Receptacle flat. Florets numerous, all hermaphrodite. Achenes glabrous. Pappus of 10 to 20 equally plumose bristles.—Hook. Ic. Pl. t. 318; Hook. f. Fl. Tasm. i. 214; *Elichrysum incanum*, Hook. Bot. Mag. t. 2881; *Helichrysum molle*, DC. Prod. vi. 194; *Elichrysum albicans*, A. Cunn. in Field, N. S. Wales, 359; *Helipterum albicans*, DC. Prod. vi. 215; *H. bicolorum*, DC. l. c.; *Waitzia brachyrhyncha*, F. Muell. in Linnæa, xxv. 407, and *Helipterum brachyrhynchum*, Sond. in Linnæa, xxv. 517 (with yellow involucres).

Queensland, *Mitchell.*

N. S. Wales. Port Jackson, *F. Mueller*; Blue Mountains, *A. Cunningham, Woolls* and others; in the interior to the Lachlan and Molle's Plains, *A. Cunningham*, *Fraser*; New England, *C. Stuart*; Hastings river, *Beckler*.

Victoria. Snowy River, Forest Creek, Mount Timbertop, Maneroo, *F. Mueller*; Grampians, *Wilhelmi*; Wimmera, *Dallachy*; Skipton, *Whan*; near Woodalich, *Robertson*.

Tasmania. Northern parts of the island at all elevations, *J. D. Hooker*.

S. Australia. Murray river, Cudnaka, Flinders Range, *F. Mueller*.

The yellow as well as the white variety sent from most localities in N. S. Wales, Victoria, and S. Australia, but only the white from Tasmania. See also F. Muell. Rep. Babb. Exped. 14, as to the diversity of colour.

12. **H. Cotula,** *DC. Prod.* vi. 215. A slender erect or ascending simple or branching annual, rarely exceeding 1 ft. and often under 6 in., flowering when only 1 or 2 in., with a few loose woolly hairs or at length glabrous. Leaves linear, very narrow, but not long, the first often opposite. Flower-heads solitary. Involucre hemispherical, spreading to from ¾ to 1 in. diameter including the ray, the outer bracts short, broad, obtuse and usually tinged with brown, the inner with short, broad, scarious, slightly woolly claws and radiating petal-like laminæ of 3 to 5 lines, varying from pure white to pale or bright yellow, a few of the innermost sometimes small. Receptacle flat. Florets numerous, all hermaphrodite, a few inner ones sometimes sterile. Achenes glabrous or papillose. Pappus of 10 to 15 plumose bristles, the upper cilia forming a yellow tuft.—Steetz in Pl. Preiss. i. 474; Hook. Bot. Mag. t. 5604; *Helichrysum Cotula*, Benth. in Hueg. Enum. 65; *Helipterum simplex*, Steetz in Pl. Preiss. i. 475; *H. citrinum*, Steetz, l. c. 474 (with yellow involucres); *H. pusillum*, Turcz. in Bull. Mosc. 1851, ii. 80; *H. præcox*, F. Muell. in Trans. Vict. Inst. 1855, 58; *H. semisterile*, F. Muell. Fragm. ii. 157; *Helichrysum Oldfieldii*, F. Muell. Fragm. iii. 134.

Queensland. Maranoa river, *Mitchell*.

N. S. Wales. Darling river, *Beckler*.

Victoria. Avoca river, *F. Mueller*.

W. Australia. King George's Sound, *Menzies*, and thence to Swan River, *Drummond*, *n.* 29, 169, 338, 339, *5th Coll. n.* 351, *Preiss*, *n.* 18, 21, *Oldfield*; Geographe Bay and Champion Bay, *Oldfield*.

The white and yellow varieties were generally gathered together by Drummond. Without examining the achene and pappus, this species might be readily confounded with *Waitzia Steetziana*.

13. **H. hyalospermum,** *F. Muell. Herb.* A slender erect glabrous or slightly woolly annual, rarely much above 6 in. high and often smaller. Leaves narrow-linear, almost filiform. Flower-heads on long peduncles, leafless except a few small scarious scales passing into the outer involucral bracts. Involucre hemispherical when fully out, 4 to 5 lines diameter without the ray, the outer bracts short, sessile, brown or yellow with a more rigid lanceolate centre, the inner with a broad scarious brown claw and yellow petal-like radiating lamina, about 2 lines long. Receptacle flat. Florets rather numerous, all hermaphrodite. Achenes glabrous or papillose, rather more compressed than in most *Heliptera*. Pappus-bristles 8 to 12, equally plumose, but yellow at the tips.—*Hyalospermum strictum* and *H. glutinosum*, Steetz in Pl. Preiss. i. 477; *Hyalospermum variabile*, Sond. in Linnæa, xxv. 519.

N. S. Wales. Lachlan river, *A. Cunningham*; Lachlan and Darling rivers, *Victorian and other Expeditions*.

Victoria. Wimmera, *Dallachy*.

S. Australia. Gawler Town, Burra-Burra, St. Vincent's Gulf, *F. Mueller*; Lake Gillies, *Burkitt.*

W. Australia. Swan River, *Drummond, n.* 340; Murchison river, *Oldfield.*

Some of the smaller specimens, where the thickening of the centre of the outer involucral bracts is less marked, are difficult to distinguish from yellow specimens of *H. Cotula.* The achenes appear to be larger than in that species (almost transparent in unripe specimens), and the scales on the peduncles do not occur in *H. Cotula.*

SECTION II. PTEROPOGON.—Involucres ovoid, turbinate-campanulate or cylindrical, the outer bracts appressed, scarious or rigid, the inner or intermediate ones with or rarely without radiating petal-like lamina or tips. Achenes villous. Florets rarely above 10.

14. **H. condensatum,** *F. Muell. Fragm.* iii. 136. Stature probably of *H. polyphyllum* and *H. Humboldtianum*, but only the upper portion of the stems seen, the inflorescence and foliage with loose cottony wool. Leaves linear or linear-oblong, obtuse, flaccid. Flower-heads small, numerous, in a compact corymb. Involucre ovoid, 2 lines long without the ray, the bracts woolly and appressed at the base, but nearly all of them with petal-like snow-white spreading laminae as long as their claws, which are broad and scarious, the inner ones with a green central line. Florets about 8 to 10, all hermaphrodite. Achenes shortly hirsute, but only seen very young. Pappus of 15 to 20 finely plumose bristles.

W. Australia. Murchison river, *Oldfield.* This species appears to connect the genus with *Cephalipterum*, which scarcely differs except in its much more compact inflorescence.

15. **H. polyphyllum,** *F. Muell. Fragm.* i. 55. An erect annual of about 1 to 1½ ft., not much branched and slightly woolly. Leaves narrow-linear, 1 to 2 in. long. Flower-heads small, rather numerous, in terminal corymbs. Involucre ovoid or narrow-campanulate, nearly 3 lines long, slightly woolly, the outer bracts appressed without laminae, the inner with broadly scarious claws and white petal-like radiating laminae, rather shorter than their claws. Florets about 10 to 12, all hermaphrodite. Achenes shortly silky-hirsute. Pappus of 15 to 20 plumose bristles.

Queensland, *Bowman* and others; basaltic plains from the Brisbane to Peak Range, *F. Mueller*; Kent's Plains, *W. Hill*; plains of the Condamine, *Leichhardt*; Rockhampton, *Thozet.*

16. **H. Humboldtianum,** *DC. Prod.* vi. 216. Erect, probably annual, 1 to 2 ft. high, woolly-white or at length nearly glabrous. Leaves linear or linear-lanceolate, acute. Flower-heads small, numerous, in dense terminal corymbs. Involucre cylindrical, 2 to 2½ lines long without the rays, the outer bracts closely imbricate with very short squarrose scarious tips, the inner with slightly woolly-ciliate claws and radiating rather rigid petal-like laminae, 1½ to 2 lines long, of a bright yellow passing (when dry) into a metallic-green. Florets about 10 to 12, all hermaphrodite, a few of the inner ones sometimes sterile. Achenes silky-hirsute. Pappus of 15 to 20 plumose bristles.—*Elichrysum Humboldtianum*, Gaudich. in Freyc. Voy. Bot. 465. t. 88; *Schœnia? Humboldtiana*, Steetz in Pl. Preiss. i. 481; *Pteropogon*

Humboldtianus, F. Muell. in Linnæa, xxv. 415; *Helipterum Sandfordii*, Hook. Bot. Mag. t. 5350; *H. largiflorens*, F. Muell. Fragm. iii. 135.

W. Australia. Sharks' Bay (*Gaudichaud*); Murchison river, *Oldfield*, *Drummond*, *6th Coll. n.* 160.

17. **H. involucratum,** *F. Muell. Fragm.* iii. 135. A slender, erect, glabrous annual, corymbosely branched, under 1 ft. high. Leaves linear, almost filiform. Flower-heads numerous in a broad flat loose corymb. Involucre cylindrical, nearly 3 lines long without the ray, the outer bracts shortly woolly or nearly glabrous with narrow-linear herbaceous squarrose tips, often passing into the upper leaves, the inner ones with scarious rather broad glabrous claws and petal-like oblong radiating laminæ, about 3 lines long, of a bright yellow. Florets about 10 to 15. Achenes densely villous. Pappus-bristles about 20, plumose.

W. Australia. Murchison river, *Oldfield*. Nearly allied to *H. tenellum*, with a somewhat different involucre.

18. **H. tenellum,** *Turcz. in. Bull. Mosc.* 1851, i. 198. An erect, slender, corymbosely branched annual, of 6 in. to 1 ft., glabrous or slightly woolly. Leaves narrow-linear or filiform. Flower-heads pedunculate or nearly sessile, in a loose or rather dense broad flat corymb, the small upper leaves passing into the outer involucral bracts. Involucre turbinate, rather more than 2 lines long without the rays, the outer bracts with linear-subulate erect herbaceous tips, the inner with radiating petal-like laminæ, about $1\frac{1}{2}$ lines long, varying from bright yellow to pure white or slightly pink. Florets about 12 to 15, all hermaphrodite. Achenes densely villous. Pappus-bristles 15 to 20, plumose.—*Pteropogon ramosus*, A. Gray in Hook. Kew Journ. iv. 270.

W. Australia, *Drummond*; the white variety between Moore and Murchison rivers, *Drummond*, *6th Coll. n.* 156.

19. **H. gracile,** *Benth.* A slender, erect, nearly simple or corymbosely branched annual, from 6 in. to nearly 1 ft. high, glabrous or very slightly woolly. Leaves linear-filiform, the lower ones occasionally opposite. Flower-heads few, solitary on the branches or in clusters of 2 or 3. Involucre ovoid, nearly 3 lines long, the outer bracts of a shining brown, appressed, a few with linear-subulate erect almost herbaceous tips, the inner ones with narrow acute petal-like radiating laminæ, shorter than their claws, of a bright yellow. Florets 10 to 15. Achenes densely villous. Pappus of about 10 plumose bristles.—*Pteropogon gracilis*, A. Gray in Hook. Kew Journ. iv. 269.

W. Australia. Swan river, *Drummond*, 1*st Coll.* Possibly a slender variety of *H. tenellum.*

20. **H. strictum,** *Benth.* An erect glabrous annual, attaining 1 to 2 ft., but often under 6 in. Leaves oblong-lanceolate or linear, mostly stem-clasping, the lower ones petiolate, the uppermost small and narrow. Fl[illegible]heads solitary on long peduncles. Involucre ovoid or at length campanulate, $\frac{1}{4}$ to $\frac{1}{2}$ in. diameter, the bracts rigid, closely imbricate, the inner ones with small oblong white radiating petal-like laminæ. Florets 3 or 4 only in some

heads, 8 to 10 in the larger ones, all hermaphrodite. Achenes densely silky-villous. Pappus of 20 or more equally plumose bristles.—*Xyridanthe stricta*, Lindl. Swan Riv. App. 23; *Pteropogon platyphyllus*, F. Muell. in Linnæa, xxv. 413.

N. S. Wales. Darling river, *Herb. F. Mueller;* Goyinga mountains, *Victorian Expedition;* between Stokes Range and Cooper's Creek, *Wheeler.*
S. Australia. Cudnaka, *F. Mueller.*
W. Australia. Swan River, *Drummond, 1st Coll.*

F. Mueller, in Rep. Babb. Exped. 14, unites this with *H. polygalifolium*, of which it has nearly the foliage, but the involucres and pappus appear to me to be very different.

21. **H. corymbiflorum,** *Schlecht. in Linnæa,* xxi. 448. An erect woolly-white corymbose annual, of ½ to 1 ft. Leaves linear or lanceolate, mostly obtuse, soft, the upper ones few and small. Flower-heads, in the original form, in a rather loose terminal leafless corymb, with a few small scarious bracts on the branches and peduncles. Involucre turbinate, about 3 lines long without the ray, the outer bracts wholly scarious, broad, obtuse, slightly woolly-ciliate, the inner with linear or cuneate claws, woolly towards the top and radiating petal-like white laminæ, about 2½ lines long. Florets all hermaphrodite, but some of the central ones usually sterile. Achenes densely silky-villous. Pappus of about 15 to 20 plumose bristles.—Sond. in Linnæa, xxv. 519.

N. S. Wales. Lachlan, Darling, and Murray rivers, *Victorian and other Expeditions.*
Victoria. Avoca river, *F. Mueller;* Wimmera, *Dallachy.*
S. Australia. Fiedler's Section, *Behr;* near Gawler Town, Holdfast Bay, *F. Mueller.*

Var. ? *microglossa*, F. Muell. Herb. Dwarf, much branched, very woolly and only 2 to 4 in. high. Inflorescence compact and leafy, scarcely corymbose. Involucres on very short peduncles or almost sessile, narrow, about 2½ lines long, the radiating laminæ very small.—Goyinga mountains, *Victorian Expedition.* Possibly a distinct species, approaching in habit the *H. pygmæum.*

22. **H. pygmæum,** *Benth.* An annual, branching from the base, diffuse or erect, 2 to 4 in. high, slightly woolly or at length glabrous. Leaves narrow-linear, almost filiform. Flower-heads not very numerous, sessile in dense terminal leafy corymbs or clusters. Involucre narrow, about 4 lines long, the bracts brown, scarious, obtuse and appressed, the inner ones with small white ovate radiating tips. Florets 4 to 6, all hermaphrodite, but about half in the centre sterile, the corolla very slender. Achenes densely silky-villous. Pappus of numerous plumose bristles.—*Pteropogon pygmæus*, DC. Prod. vi. 245; A. Gray in Hook. Kew Journ. iv. 267; *P. australis*, Nees in Linnæa, xvi. 223.

N. S. Wales. Molle's Plains, A. *Cunningham, Fraser;* Darling and Lachlan rivers, *Burkitt.*
Victoria. Wimmera and Murray river, *Dallachy.*
S. Australia. Flinders Range, Cudnaka, towards Lake Torrens, *F. Mueller.*

Var. *occidentale.* Usually, but not always more glabrous, with rather smaller flower-ds, the radiating tips of the bracts sometimes very minute.—*Pteropogon Drummondii*, ray in Hook. Kew Journ. iv. 267.
W. Australia, *Drummond, 4th Coll. n.* 175.

23. **H. spicatum,** *F. Muell. Herb.* Said to be annual, but the base

often hard and almost woody and showing sometimes a creeping rhizome, the stems slender, erect, often exceeding 1 ft., woolly-white or hoary or at length glabrous. Leaves linear, almost filiform, the lower ones sometimes above 2 in. long the upper ones few, small and distant. Flower-heads very small, in a dense globular or ovoid terminal leafless cluster, sometimes extended into an oblong spike interrupted at the base. Involucre narrow, ovoid-cylindrical, 2 to 2½ lines long, the bracts scarious but rather rigid, usually of a rich shining reddish-brown, rarely pale-coloured, without spreading tips or wool inside. Florets about 5 or 6, all hermaphrodite and fertile or 2 or 3 of the inner ones sterile. Achenes densely silky-villous. Pappus-bristles rigid, plumose.—*Pteropogon spicatus*, Steetz in Pl. Preiss. i. 479; A. Gray in Hook. Kew Journ. iv. 268.

W. Australia, *Drummond, n.* 19, 362; Mount Lehmann, *Preiss, n.* 24; Champion Bay, Toodyay and Murchison rivers, *Oldfield.*

Var. *pallens.* Cluster of flower-heads larger, more compound and not so dense, the involucres very pale brown, all other characters precisely as in the original form.—*Helipterum monencyanthioides,* F. Muell. Fragm. iii. 137.—Tone and Salt rivers, *Maxwell.*

SECTION III. MONENCYANTHES.—Involucres ovoid, cylindrical or campanulate, the bracts scarious or coloured, without any or with very minute scarious radiating tips. Achenes glabrous or papillose. Flower-heads often very small.

24. **H. moschatum,** *Benth.* Annual or perhaps sometimes perennial with a creeping rhizome. Stems erect or decumbent at the base, ½ to 1½ ft. high, densely woolly as well as the foliage. Lower leaves petiolate, obovate or spathulate, the upper ones lanceolate or oblanceolate and stem-clasping. Flower-heads small and numerous, nearly sessile in dense corymbose or almost globular clusters. Involucres ovoid, scarcely 2 lines long, the bracts scarious, varying from a rich brown to pale straw-colour, without spreading tips, densely woolly inside at the base. Florets in all the specimens examined 2 or 3, all hermaphrodite and fertile. Achenes narrow-oblong, contracted at the base, smooth and glabrous, but so closely enveloped in the long intricate surrounding wool that it is difficult to extract them.—*Gnaphalium moschatum*, A. Cunn. in DC. Prod. vi. 236; *Calocephalus gnaphalioides*, Hook. in Mitch. Trop. Austr. 378; *Monencyanthes gnaphalioides*, A. Gray in Hook. Kew Journ. iv. 230.

Queensland. Near the Balonne river, *Mitchell.*

N. S. Wales. Molle's Plains, *A. Cunningham, Fraser;* Darling and Murray rivers, to the Barrier Range, *Victorian and other Expeditions.*

Victoria. Wimmera, *Dallachy.*

S. Australia. Cudnaka, Crystal Brook, Mount Lofty Ranges, *F. Mueller;* Wills' Creek, *Howitt's Expedition.*

The species has something of the aspect of *Gnaphalium luteo-album.*

25. **H. pterochætum,** *Benth.* An undershrub or small shrub, with slender but rigid divaricate woolly-white branches. Leaves narrow-linear, with revolute margins, nearly glabrous. Flower-heads small, nearly sessile in small terminal clusters. Involucre narrow-turbinate, straw-coloured, the bracts appressed, scarious, ciliate, with very small tips, deeper coloured but not radiating. Florets 15 to 20, all apparently hermaphrodite. Achenes

oblong, papillose. Pappus of 8 to 15 very fine plumose bristles.—*Chrysocephalum pterochætum*, F. Muell. in Linnæa, xxv. 416; *Helichrysum pterochætum*, F. Muell. Rep. Babb. Exped. 14.

N. S. Wales. Mount Goningberi, *Victorian Expedition.*

S. Australia. Near Cudnaka, *F. Mueller;* Stuart's Creek, Lake Gregory, *Babbage's Expedition.*

The tube of the corolla is bulbous, not at the base, as occurs more or less in many species, but just above the base in the specimens examined.

26. **H. polycephalum,** *Benth.* A slender erect corymbosely branched annual of 6 in. to 1 ft., at first woolly-white but soon glabrous, except the under side of the leaves. Leaves linear or linear-lanceolate, acute, the larger ones often decurrent. Flower-heads very small, all pedunculate in a large loose terminal corymb or panicle. Involucre narrow, scarcely 2 lines long, the bracts rigidly scarious, of a light shining reddish-brown, without spreading tips. Florets 10 to 15, all hermaphrodite and often all fertile. Achenes glabrous or sprinkled with a few short hairs. Pappus-bristles about 10, plumose.—*Pteropogon polycephalus*, A. Gray in Hook. Kew Journ. iv. 268; *Cassinia cuprea* or *Cassiniola cuprea*, F. Muell. Fragm. iii. 139.

W. Australia, *Drummond, Preiss, n.* 43; Murchison river, *Oldfield.*

27. **H. corymbosum,** *Benth.* An erect corymbosely branched annual, 6 in. to 1 ft. high, woolly-white or at length glabrous. Leaves linear or linear-lanceolate, acute, not decurrent. Flower-heads very small, shortly pedunculate in little clusters of 2 to 5, forming a loose irregular corymb. Involucre narrow, rather above 2 lines long, the bracts shining, of a reddish-brown, appressed, the inner ones usually but not always with minute white spreading tips. Florets achenes and pappus of *H. polycephalum*, of which this may possibly prove a variety.—*Pteropogon corymbosus*, A. Gray in Hook. Kew Journ. iv. 268.

W. Australia, *Drummond, 5th Coll. n.* 364; Darling Range, *Collie.*

28. **H. læve,** *Benth.* A slender erect branching annual under 6 in. high and quite glabrous. Leaves small, linear, rather obtuse, narrowed at the base. Flower-heads very small, all pedunculate, forming an irregularly corymbose panicle. Involucre narrow, about 2 lines long, the bracts of a rich shining brown, without spreading tips. Florets 10 to 12, all hermaphrodite. Achenes nearly glabrous. Pappus-bristles about 10.—*Pteropogon lævis*, A. Gray in Hook. Kew Journ. iv. 269.

W. Australia, *Drummond, 5th Coll. n.* 366. Nearly allied to the two preceding species.

29. **H. exiguum,** *F. Muell. in Trans. Vict. Inst.* 1855, 39. A dwarf, very much branched, nearly glabrous annual, forming little tufts 1 to 1½ in. diameter. Leaves small, linear-filiform. Flower-heads small, rather numerous, sessile. Involucre campanulate, about 1½ lines diameter, the bracts scarious, of a reddish-brown, obtuse, without radiating tips. Florets 20 to 40, all hermaphrodite. Achenes glabrous or papillose. Pappus of about 10 plumose bristles. *Pteropogon demissus*, A. Gray in Hook. Kew Journ. iv. 269.

Victoria. Sandy stony declivities, Grampians, Serra and Victoria ranges, *F. Mueller;* Wimmera, *Dallachy;* Skipton, *Whan.*

S. Australia. Bugle Ranges and near Gawler Town, *F. Mueller.*

W. Australia, *Drummond, 5th Coll. Suppl. n.* 66.

30. **H. dimorpholepis,** *Benth.* An annual with erect or ascending branching stems, green, with a few long hairs, but scarcely any wool. Leaves linear, rather broad, ½ to 1 in long. Flower-heads small, sessile within a few floral leaves exceeding the head, terminal or sometimes lateral. Involucre broadly ovoid, above 2 lines long, the outer bracts lanceolate, scarious, fringed with long cilia, the inner with rigid glandular claws and small scarious tips not spreading. Receptacle conical. Florets rather numerous, exceeding the involucre, a few of the outer ones female. Achenes glabrous. Pappus of about 3 or 4 plumose-ciliate bristles, more or less flattened and scale-like, the outer achenes, especially those of the female florets, often without any pappus, and the innermost usually abortive.—*Dimorpholepis australis,* A. Gray in Hook. Kew Journ. iv. 227; Hook. Ic. Pl. t. 856; *Triptilodiscus pygmæus,* Turcz. in Bull. Mosc. 1851, ii. 66; *Duttonia sessiliceps,* F. Muell. in Linnæa, xxv. 410.

N. S. Wales. Port Jackson, *F. Mueller;* Blue Mountains, beyond Berrima, *Woolls;* Nangas, *M'Arthur;* New England, *C. Stuart.*

Victoria. Murray river, Yarra-Yarra, Mount M'Ivor, *F. Mueller;* Firy Creek, *Whan.*

S. Australia. Rocky Creek, *F. Mueller.*

W. Australia, *Drummond, 5th Coll. Suppl. n.* 54.

78. RAOULIA, Hook. f.

(Merope, *Wed.*)

Involucre ovoid campanulate or hemispherical, the bracts imbricate in several rows, more or less scarious, often opening out elastically when old, the inner ones rarely with radiating coloured tips. Receptacle flat or convex, without scales. Florets all tubular, the outer ones in 1 or rarely 2 rows, female and very slender, those of the disk hermaphrodite, 5-toothed, sometimes sterile. Anthers with fine tails. Style-branches nearly terete, truncate or capitate, sometimes undivided in sterile florets. Achenes oblong or obovate, glabrous or slightly hirsute, not beaked. Pappus of capillary bristles, simple or denticulate and occasionally thickened towards the end.—Dwarf densely tufted perennials, the short branches closely covered with small imbricate leaves, rarely shortly diffuse with crowded but less imbricate leaves. Flower-heads solitary, sessile or shortly pedunculate at the ends of the branches.

An alpine genus, extending over New Zealand and antarctic and Andine S. America; the two Australian species both endemic. In essential character the genus can scarcely be said to differ from *Helichrysum,* but from the peculiar habit the species have been always more readily connected with *Gnaphalium,* from which it differs in the female florets always much fewer than the hermaphrodites. A. Gray unites the American species with *Lucilia,* in which he may be right, although the habit and shape of the involucre appear to be different. The group requires much further revision, and may be better characterized when we obtain more numerous and more perfect specimens of several species which are as yet but little known.

Leaves imbricate, densely woolly-villous. Scapes leafless, ½ to 1 in. . 1. *R. Planchoni.*
Leaves crowded on decumbent stems, but not imbricate, closely silky-tomentose. Flower-heads sessile . . . . 2. *R. Catipes.*

1. **R. Planchoni,** *Hook. f.* A dwarf perennial, forming broad dense tufts, the branches concealed by the remains of old leaves. Leaves imbricate, obovate, 3 to 4 lines long, thick and densely villous with rust-coloured woolly hairs, becoming hoary when old. Scapes or terminal peduncles ½ to 1 in. high, leafless or with a single small bract, bearing a single flower-head. Involucre ovoid, about 3 lines long, the bracts scarious, narrow-linear, acute, the outer ones slightly woolly. Female florets few, in a single row; disk-florets numerous, mostly fertile. Achenes slightly hirsute. Pappus-bristles numerous, free, not thickened upwards.—*Gnaphalium Planchoni*, Hook. f. Fl. Tasm. i. 217. t. 62 C.

Tasmania. Table mountain, Derwent river, *R. Brown*; summit of Mount Olympus, *Gunn.*

2. **R. Catipes,** *Hook. f. Fl. Tasm.* i. 206. *t.* 58 (*R. tasmanica* on the plate). A low decumbent much-branched perennial, forming large tufts of a silvery-white from the uniform closely-appressed tomentum, the stems ascending to from 2 to nearly 6 in. Leaves crowded but scarcely imbricate, spreading and shortly decurrent, obovate-spathulate or oblanceolate, flat or concave, 2 to 3 or rarely 4 lines long. Flower-heads terminal, solitary and sessile. Involucre hemispherical, 3 to 4 lines diameter, the bracts scarious brown and appressed at the base, all but the outermost with small oblong spreading white tips. Florets numerous, mostly hermaphrodite with 1 (or rarely 2?) rows of female florets in the circumference, the majority of the hermaphrodites apparently sterile in some specimens, nearly all fertile in others, but the species does not appear to be so completely diœcious as are most *Antennariæ*. Style of the hermaphrodite florets always branched in all the specimens examined, though the branches do not always spread. Achenes pubescent. Pappus-bristles not very numerous, slightly cohering at the base, denticulate and thickened towards the end, especially in the hermaphrodite florets, very caducous.—*Gnaphalium Catipes*, DC. Prod. vi. 236; *Antennaria nubigena*, F. Muell. in Trans. Phil. Soc. Vict. i. 45, and in Hook. Kew Journ. viii. 161. Pl. Vict. t. 45.

Victoria. Cobberas mountains, at an elevation of 6000 ft., *F. Mueller.*
Tasmania. Bare rocks on the summits of the highest mountains, *Gunn.*

SUBTRIBE III. EUGNAPHALIEÆ.—Flower-heads distinct or in dense clusters or compound heads, usually small. Female filiform florets numerous, in several rows or in separate heads.

79. ANTENNARIA, Gærtn.

Involucre ovoid campanulate or hemispherical, the bracts imbricate in several rows, more or less scarious, with or without spreading coloured laminæ. Receptacle without scales. Flower-heads diœcious; florets in the female individuals all filiform, 2- or 3-toothed, those in the male individuals apparently hermaphrodite but sterile, tubular, 4- or 5-toothed. Anthers with fine tails. Style in the males undivided. Achenes oblong, terete or compound, not beaked, abortive in the males. Pappus of capillary bristles, usually thickened and denticulate towards the end in the male florets or in all.—Perennial herbs with a tufted or branching base, the normal species more or less cottony-white. Leaves alternate, entire. Flowering-stems in the true species ascending or erect, bearing a cluster or corymb of small flower-heads. In the Australian species the flower-head exceptionally sessile and solitary.

The genus is spread over the northern hemisphere, chiefly in mountain regions, extending into the Andes of South America. The only Australian species (doubtfully inserted in the genus) is endemic.

1. **A. (?) uniceps,** *F. Muell. in Trans. Phil. Soc. Vict.* i. 105, *and in Hook. Kew Journ.* viii. 161. A small densely-tufted or shortly creeping perennial, quite glabrous. Leaves crowded linear or linear-cuneate, mucronate-acute, rigid, concave, about 3 lines long, narrowed towards the base and again dilated into a purplish stem-clasping sheath. Flower-heads small, solitary, almost sessile within the last leaves and shorter than them. Involucre ovoid, the inner bracts with slightly spreading tips, but without coloured laminæ. Florets rather numerous, all sterile with an undivided style in the specimens seen. Achenes abortive with a pappus of simple bristles in a single row, slightly serrulate but scarcely thickened upwards.

Victoria. Gravelly plains near springs, Munyang mountains, at an elevation of 5000 to 6000 ft., *F. Mueller.* I leave this for the present in the genus in which it was originally placed, for, until the fertile florets shall have been observed, its true affinities cannot be ascertained. The habit is not at all that of *Antennaria.* It will most probably prove to be a *Raoulia.*

80. GNAPHALIUM, Linn.

(Leontopodium, *R. Br.*; Euchiton, *Cass.*)

Involucre ovoid or campanulate (rarely hemispherical ?), the bracts imbricate in several rows, more or less scarious, with or without small spreading tips. Receptacle without scales. Florets of the circumference female, filiform, in 2 or more rows, often very numerous, those of the disk fewer, often very few, hermaphrodite, tubular, 5-toothed. Anthers with fine tails. Style-branches in the disk-florets nearly terete, truncate. Achenes oblong or obovate, not striate, glabrous or papillose. Pappus of capillary bristles, in a single row.—Herbs annual or perennial, more or less cottony or woolly. Leaves alternate, entire, usually soft. Flower-heads small, usually clustered, either in the upper axils or in terminal spikes, corymbs or compound heads, rarely solitary.

A considerable genus, distributed over nearly the whole globe, but as yet very imperfectly defined. Of the 8 Australian species, 1 occupy a very wide range in the Old World, and 2 of them also in America. Of the remaining 4, 1 is also in New Zealand, the other 3 are endemic.

Clusters or compact corymbs of flower-heads terminal, leafless, solitary or several in an irregular panicle . . . . 1. *G. luteo-album.*
Clusters forming a terminal globular head, usually surrounded by a few floral leaves.
  Annual . . . . 2. *G. japonicum.*
  Perennials with a tufted or creeping rhizome.
    Floral leaves narrow, glabrous above . . . . 3. *G. collinum.*

Floral leaves oblong, spreading, cottony on both sides. Flower-heads almost monœcious . . . . 4. *G. alpigenum.*
Clusters of flower-heads axillary or forming a terminal spike.
  Flower-heads about 2 lines long . . . . 5. *G. purpureum.*
  Flower-heads about 1 line long . . . . 6. *G. indicum.*
Flower-heads in little leafy corymbs. Branching annual of 1 to 3 in. 7. *G. indutum.*
Flower-heads solitary on leafy scapes of ½ to 3 in.
  Involucre about 2 lines long, surrounded by linear floral leaves . 3. *G. collinum*, var.
  Involucre at least 3 lines long, without floral leaves, besides very short woolly outer bracts . . . . 8. *G. Traversii.*

1. **G. luteo-album,** *Linn.; DC. Prod.* vi. 230. An annual or perhaps biennial, densely woolly-white, with ascending or erect stems of 1 to 1½ ft. when full grown. Lower leaves petiolate obovate or oblong-spathulate, obtuse; upper ones sessile linear or lanceolate, acute, all usually soft and retaining the wool on both sides. Flower-heads in loose terminal nearly globose clusters or dense corymbs, without floral leaves, either solitary and terminal or several of the clusters in the forks or on the branches of an irregular corymbose panicle. Involucres about 2 lines diameter, nearly globose, the bracts scarious, pale brown or straw-colour, with obtuse scarious tips not spreading. Female florets exceedingly numerous with a few hermaphrodites in the centre.—Hook. f. Fl. Tasm. i. 216; Steetz in Pl. Preiss. i. 478.

Queensland. Cape Upstart, Barnard Isles, Port Curtis, *M'Gillivray*; Suttor river, *Bowman*; Keppel Bay, *Thozet.*

N S. Wales. Port Jackson to the Blue Mountains, *R. Brown* and others; northward to Clarence river, *Beckler*; southward to Gabo island, *Maplestone*; Lord Howe's Island, *M'Gillivray.*

Victoria. Murray river, Station Peak, *F. Mueller*; Wimmera, *Dallachy*; Skipton, *Whan*; Portland, *Allitt.*

Tasmania. Abundant in rocky places and wet or dry pastures, *J. D. Hooker.*

S. Australia. Mount Gambier, Lofty Range, Kangaroo Island, *F. Mueller*; Burra Burra, *Hinteraecker.*

W. Australia. King George's Sound and neighbouring districts, *Drummond, Preiss*, *n.* 33, 34; eastward to Esperance Bay, *Maxwell*; Murchison river, *Oldfield.*

The species is common in almost all the warm and temperate regions of the globe.

2. **G. japonicum,** *Thunb. Fl. Jap.* 311. An erect annual, usually under 1 ft., but when luxuriant 1½ ft. high, more or less cottony-white, the base of the stem often hard and almost woody. Leaves from oblong-spathulate and narrowed into a long petiole to linear and sessile, becoming glabrous above, cottony-white underneath. Flower-heads small, in dense globose clusters or compound heads, surrounded by a few floral leaves, either terminal and ½ to 1 in. diameter or axillary and smaller. Involucres oblong, imbedded at the base in a dense white wool, the bracts scarious, brown or straw-colour, erect, obtuse or the inner ones acute, without spreading tips. Female florets 20 or more, hermaphrodite ones in the centre, solitary or very few. Achenes slightly compressed. Pappus-bristles very fine, scarcely cohering at the base.—Miq. Prolus. Fl. Jap. 109; F. Muell. Fragm. v. 150; *G. involucratum*, Forst. Prod. 55; DC. Prod. vi. 235; Hook. f. Fl. Tasm. i. 216; Steetz in Pl. Preiss. i. 478; Bot. Mag. t. 2582; *Euchiton Forsteri* and *E. pulchellus*, Cass. (DC.).

Queensland. Northumberland islands, *R. Brown*; Keppel Bay, *Thozet*; Brisbane river, Moreton Bay, *F. Mueller*.

N. S. Wales. Port Jackson, *R. Brown*, *Sieber*, *n.* 343, and others; New England, *C. Stuart*; Clarence river, *Beckler*; Darling river, *Victorian Expedition*.

Victoria. Murray river, *Dallachy*; Creswick and Ballarat, *Whan*.

Tasmania. Common in many parts of the island, *J. D. Hooker*.

S. Australia. Near Adelaide, Torrens river, Kensington, *F. Mueller*; Kangaroo island, *Waterhouse*.

W. Australia. South coast to Swan River, *Drummond*, *n.* 22, *5th Coll. n.* 370, *Preiss*, *n.* 46, 47, and others; Murchison river, *Oldfield*.

The species is also in New Zealand, and extends over some parts of the Eastern Archipelago, and northwards to Japan, from whence we have many specimens, easily recognized by Thunberg's description, but first identified by Miquel. With regard to the several synonyms quoted by De Candolle and copied by F. Mueller, some must remain doubtful, for De Candolle gives the perennial sign to his species, whilst all the perfect specimens I have seen show an annual root, as described by Thunberg.

3. **G. collinum,** *Labill. Pl. Nov. Holl.* ii. 44. *t.* 189. Very nearly allied to *G. japonicum*, and referred to it as a synonym by *F. Mueller*. It appears, however, to be always perennial, forming a tufted stock or emitting underground creeping rhizomes, the stature is usually smaller, the indumentum closer. Leaves more acute, the radical ones more persistent, usually glabrous above, white underneath. Flower-heads not forming so compact a head, and each involucre broader, usually brown. Florets and achenes the same as in *G. japonicum*. DC. Prod. vi. 235; Hook. f. Fl. Tasm. i. 216; *Euchiton collinum*, Cass. (DC.).

N. S. Wales. New England, *C. Stuart*; Clarence river, *Beckler*.

Tasmania. Dry pastures, not very common, *J. D. Hooker*.

Var.? *radicans*, F. Muell. Dwarf and tufted. Flower-heads few, much larger than in the ordinary form.

Victoria. Summits of the Australian Alps, *F. Mueller*.

Tasmania. Western mountains, *Archer*.

Var.? *monocephalum*, Hook. f. Fl. Tasm. ii. 364. Very dwarf, with linear leaves and solitary flower-heads.—Australian Alps, *F. Mueller*.

These two varieties may possibly prove to be reduced states of *G. alpigenum*, for the specimens are scarcely in a normal condition.

G. gymnocephalum, DC. Prod. vi. 235, from Port Jackson, *G. cephaloideum*, Willd.; DC. Prod. vi. 236, raised in Continental gardens from Baudin's Australian seed, are probably, as suggested by De Candolle, *G. collinum* and *G. japonicum* (*G. involucratum*) respectively; but without the inspection of authentic specimens, it is impossible to ascertain the point.

4. **G. alpigenum,** *F. Muell.*; *Hook. f. Fl. Tasm.* i. 217. *t.* 62 A. A perennial with a tufted stock, emitting creeping stolons or prostrate barren stems. Radical leaves on long petioles, ovate or oblong, rather thick, cottony-white on both sides or at length nearly glabrous above. Flowering-stems not above 6 in. high, with a few oblong or spathulate leaves, all petiolate. Flower-heads in terminal globose clusters, surrounded by a few oblong cottony floral leaves, and a few small clusters sometimes in the upper axils; the heads nearly monœcious, in some the florets all or nearly all hermaphrodite but sterile, in others nearly all female, with 1 or 2 hermaphrodite in the centre. Involucre ovoid, about 2 lines long, cottony at the base only, the bracts oblong, obtuse, scarious, usually of a pale brown. Pappus-bristles numerous, quite free.

Victoria. Australian Alps, at an elevation of 4000 to 6000 ft., *F. Mueller*.
Tasmania. Table mountain, Derwent river, *R. Brown;* Western mountains, *Lawrence, Gunn*.

The species is allied on the one hand to *G. collinum*, on the other to the European *G. leontopodium*.

5. **G. purpureum,** *Linn.; DC. Prod.* vi. 232. An annual or perennial of short duration. Stems simple or branching from the base, ascending or erect, 6 in. to 1 ft. high. Leaves mostly petiolate and spathulate, or the upper ones rarely linear, cottony-white on both sides as well as the stem. Flower-heads in short dense clusters in the axils of the upper leaves, the lower clusters distant, the upper ones forming a terminal leafy spike. Involucre about 2 lines long, the bracts oblong-linear, scarious but woolly, of a dirty white or pale brown. Female florets very numerous, with 2 or 3 hermaphrodite ones in the centre. Pappus-bristles slightly scabrous, cohering in a ring at the base.

Queensland. Brisbane river, Moreton Bay, *Leichhardt, F. Mueller, Heane*.
N. S. Wales. In cultivated places, Port Jackson, *R. Brown;* common about Sydney, *Woolls*.

This appears to be a N. American species, now spread over many parts of the Old World, and probably introduced into Australia since its settlement.

6. **G. indicum,** *Linn.; DC. Prod.* vi. 231. A decumbent ascending or erect annual, rarely exceeding 6 in., covered with a loose cottony wool, sometimes very abundant. Leaves petiolate, spathulate or linear. Flower-heads small, densely clustered in ovate or oblong terminal leafy spikes, with a few in the upper axils. Involucres ovoid, about 1 line long, the bracts densely imbedded in wool, the tips only usually protruding. Female florets very numerous, with 2 or 3 hermaphrodite ones in the centre. Pappus-bristles numerous, cohering in a ring at the base.—*G. niliacum*, Raddi; DC. l. c.

Queensland. Upper Roper and Alligator rivers, *F. Mueller*.
N. S. Wales. Darling river, *Victorian Expedition*.
Victoria. Near Station Peak, *Herb. F. Mueller*.

The species is common in India, extending westward to the Nile and eastward to the Malayan peninsula and China. F. Mueller, Fragm. v. 149, unites it with *G. purpureum;* they appear to me, however, to be always readily distinguished, the *G. indicum* being of the Old World, the *G. purpureum* of American origin. The Australian specimens are small, with very narrow leaves.

7. **G. indutum,** *Hook. f. in Hook. Lond. Journ.* vi. 121, *and in Fl. Tasm.* i. 217. *t.* 62 B. A little slender, erect, much-branched annual, rarely above 3 in. high and often not above 1 in., densely cottony-white. Leaves linear, soft. Flower-heads small, sessile amongst leafy bracts, at first dense but not in globular heads, and at length looser, forming leafy corymbs. Involucre ovoid, about 1 line long or scarcely more, woolly at the base; the bracts oblong, with erect, scarious, brown or straw-coloured tips. Female florets very numerous, with 2 to 4 hermaphrodite ones in the centre. Pappus-bristles quite free.—*G. sericeum*, Turcz. in Bull. Mosc. 1851, ii. 83.

N. S. Wales. Twofold Bay, *F. Mueller*.
Victoria. Near Melbourne, Brighton, *F. Mueller*.
Tasmania. Circular Head, George Town, *Gunn*.

S. Australia. Crystal Brook, Rivoli Bay, *F. Mueller.*
W. Australia, *Drummond, 5th Coll. n.* 392.

The inflorescence of this species is different from that of any other *Gnaphalium* known to me. F. Mueller, Fragm. vi. 150, compares it with the S. African *G. pauciflorum,* DC., a little-known species, of which we have no specimen, but the inflorescence described is different from that of *G. indutum.*

8. **G. Traversii,** *Hook. f. Handb. N. Zeal. Fl.* 154. A dwarf, tufted perennial. Leaves radical, petiolate, obovate or broadly oblong, white with a close cottony wool on both sides. Scapes erect, 1 to 3 in. high, bearing a few small narrow leaves and a single flower-head. Involucre broadly ovoid, about 3 lines long, the bracts linear, scarious, of a pale brown or tinged with red immediately under the erect tips, slightly woolly at the base. Female florets very numerous, with few hermaphrodite ones in the centre. Pappus-bristles very fine and copious, scarcely uniseriate.

Victoria. Subalpine pastures, Snowy River, *F. Mueller.* Also in New Zealand.

81. PTERYGOPAPPUS, Hook. f.

(Maja, *Wedd.*)

Involucre ovoid, the bracts imbricate, scarious, without spreading tips. Receptacle without scales. Florets of the circumference female, filiform, those of the disk fewer, hermaphrodite, tubular, 5-toothed. Anthers with small fine tails. Style-branches in the hermaphrodite but sterile florets exceedingly short, truncate, scarcely spreading. Achenes oblong, papillose. Pappus of few thick bristles, strongly barbellate or almost plumose.—Tufted perennial. Leaves imbricate. Flower-heads solitary and nearly sessile.

The genus is limited to a single species, endemic in Australia.

1. **P. Lawrencii,** *Hook. f. in Hook. Lond. Journ.* vi. 120, *and Fl. Tasm.* i. 207. *t.* 58. A very densely-tufted, almost moss-like plant, with the habit of many species of *Abrotanella.* Leaves densely imbricated on the short closely-packed stems, ovate, acute, thick, concave, about 1 line long, the upper surface hirsute, especially near the base, with long hairs, nearly glabrous outside. Involucre scarcely above 1 line long, the bracts few, pale brown. Florets about 10, of which about 6 slender and female, and 2 to 4 hermaphrodite but sterile, in the flower-heads examined. Pappus-bristles 6 or fewer. *Maja compacta,* Wedd. Chlor. And. i. 229. t. 27* (introduced amongst Andine plants, from an error in the Herbarium whence it was received).

Tasmania. On the summits of all the mountains, forming, with *Abrotanella forsterioides,* and others, large pulvinate masses, *J. D. Hooker.*

The truly Andine *Antennaria arctioides,* A. Gray, is evidently nearly allied to this species, but its leaves are very obtuse, the hairs white and more woolly, the flower-heads said to be absolutely diœcious, and the pappus-bristles are much finer and more numerous than in *Pterygopappus.*

82. STUARTINA, Sond.

Involucre ovoid, the bracts imbricate, appressed, without appendages, or

the inner ones with recurved horn-like tips. Receptacle without scales. Florets few, those of the circumference female filiform, those of the disk very few, hermaphrodite, 4- or 5-toothed. Anthers with small fine tails. Style-branches terete, truncate. Achenes obovoid-oblong. Pappus none.—Annual, with the habit of *Gnaphalium.*

The genus is limited to a single species, endemic in Australia, differing from *Gnaphalium* in the absence of the pappus.

1. **S. Muelleri,** *Sond. in Linnæa,* xxv. 522. A small diffuse or slender annual, rarely 6 in. high. Leaves on long petioles, nearly orbicular, about ¼ in. diameter, woolly-tomentose or at length glabrous above. Flower-heads very small, in little globular clusters, sessile amongst floral leaves similar to those of the stem, the petioles much longer than the clusters. Involucres narrow, scarcely 1 line long, surrounded by a tuft of long woolly hairs, the bracts appressed, but after flowering 1 to 3 of the inner ones are usually produced into recurved horns. Florets from 5 to 7, of which 1 or 2 in the centre hermaphrodite. Achenes glabrous or papillose.

Victoria. Barossa range, Geelong, *F. Mueller.*
S. Australia. Lofty range, Onkaparinga, Cudnaka, *F. Mueller.*

TRIBE IX. SENECIONIDÆ.—Leaves alternate. Flower-heads either heterogamous, with the female florets ligulate or rarely filiform, or sometimes homogamous, with all the florets hermaphrodite and tubular. Receptacle without scales. Anthers obtuse or scarcely pointed at the base, without tails. Style-branches truncate and penicillate, or rarely with pubescent tips or appendages. Pappus of capillary bristles. Involucral bracts in the Australian genera in a single row, with or without a few small outer ones round their base.

83. ERECHTHITES, Rafin.

(Neoceis, *Cass.*)

Involucre of several nearly equal bracts, apparently in a single row, the margins often scarious and imbricate, with a few small ones round the base. Receptacle without scales. Florets all tubular, those of the circumference in 2 or more rows, female, filiform, 3- or 4-toothed or rarely a few outer ones very slightly dilated at the tips, and deeper cleft on the inner side; disk-florets hermaphrodite, 5-toothed. Anthers obtuse at the base. Style-branches truncate. Achenes striate or angular. Pappus of numerous simple fine capillary bristles.—Herbs, annual or perennial. Leaves alternate, entire toothed lobed or pinnately divided. Flower-heads in terminal corymbs. Florets small, usually yellow.

The genus is dispersed over New Zealand and South America, and extends into Africa and Asia, but belongs chiefly to the southern hemisphere. Of the six Australian species, three are also in New Zealand, the three others are endemic. All are nearly allied to *Senecio,* but differ constantly in their filiform female florets. F. Mueller proposes to unite the two genera, on account of those supposed intermediate species forming De Candolle's section *Plagiotome.* It appears to me, however, that there is here some mistake, owing probably to De Candolle, from imperfect specimens, having confounded his *E. Bathurstiana* (a variety of *E. arguta*) with *Senecio brachyglossus.* In the numerous specimens I have examined, I have always found in *E. Bathurstiana,* DC., and its allies, at least two rows of filiform female florets, the outer ones rarely slightly dilated, but not really ligulate, and in *S. brachyglossus* a single row of minute but distinctly-marked ligulæ, without any filiform female florets. The generic name is more frequently spelt *Erechtites* than *Erechthites*, but the latter appears to be the more correct, for in Greek etymologies the *t* after *ch* is always replaced by *th*. The species are exceedingly difficult to limit by any fixed tangible characters, and require further study, especially of the *ripe* achenes, which are seldom present in herbarium specimens.

Involucres small, mostly of 8 to 10 bracts. Plants without wool, glabrous or nearly so.
  Annual. Leaves toothed or lobed . . . . 1. *E. prenanthoides.*
  Perennial. Leaves once- twice- or thrice-pinnatifid, with linear segments . . . . 2. *E. Atkinsoniæ.*
Involucres of about 12 bracts. Plants usually more or less cottony-woolly or scabrous-hirsute.
  Leaves mostly toothed lobed or divided. Involucres above 3 lines long. Achenes short. Annual, often hard at the base (rarely perennial ?) . . . . 3. *E. arguta.*
  Leaves deeply lobed or divided. Involucres about 4 lines long. Perennial . . . . 4. *E. mixta.*
  Leaves linear, mostly entire. Achenes rather long, sometimes contracted into a short beak. Perennial . . . . 5. *E. quadridentata.*
Involucres of about 15 to 20 bracts. Leaves linear, entire toothed or pinnatifid. Achenes often contracted at the top. Perennial . . 6. *E. hispidula.*

F. Mueller informs me that an *E. Muelleri*, was published by Lange in the seed-catalogue of the Copenhagen garden for 1861. It is entirely unknown to me.

1. **E. prenanthoides,** *DC. Prod.* vi. 296. An erect herb, apparently annual, of 1 to 3 ft., usually glabrous and always without wool. Leaves lanceolate or almost linear, 2 to 5 or even 6 in. long, irregularly or almost regularly denticulate along their whole length, clasping the stem by toothed auricles. Flower-heads numerous in a loose terminal corymb. Involucres narrow, about 3 lines long, of about 8 or very rarely a few of 10 or 11 very narrow bracts. Female florets about 12 to 15, hermaphrodite about half as many. Achenes angular, slightly hirsute or nearly glabrous, much shorter than in *E. quadridentata* and not contracted at the top.—Hook. f. Fl. Tasm. i. 218; *Senecio prenanthoides*, A. Rich. Sert. Astrol. 96; also probably *E. sonchoides*, DC. Prod. vi. 296, and *Senecio flaccidus*, A. Rich. Sert. Astrol. 110, from the characters given.

N. S. Wales. Port Jackson, *R. Brown* and others; Kiama, *Harvey.*

Victoria. Wendu Vale, *Robertson*; Dandenong Ranges and Gipps' Land, *F. Mueller.*

Tasmania. Kent's group, *R. Brown*; margins of streams in cool shady places, *J. D. Hooker.*

The species is also in New Zealand.

Var. *picridioides.* Tall and stout, more or less scabrous with short scattered hairs. Leaves larger and broader, coarsely lobed. Panicles involucres and florets of the typical form.—*E. picridioides*, Turcz. in Bull. Mosc. 1851, i. 200.

W. Australia, *Drummond*, *3rd Coll. n.* 132.

2. **E. Atkinsoniæ,** *F. Muell Fragm.* v. 88. An erect glabrous herb several feet high, closely allied to *E. prenanthoides*, with the same small flower-heads in a large terminal panicle, but perennial and the leaves once, twice or three times pinnately divided into narrow-linear segments, the involucral bracts are more frequently 10 and sometimes 11 or 12, and the female florets rather more numerous than in *E. prenanthoides.*

N. S. Wales. Grose river, *R. Brown*; Blue Mountains, *Miss Atkinson.*

3. **E. arguta,** *DC. Prod.* vi. 296. A rather coarse erect herb of 1 to 2 ft. when full grown, usually annual but with a hard base, sometimes probably biennial (or perhaps with a more persistent rhizome), more or less scabrous-hirsute with crisped hairs, and occasionally with white cottony wool on the under side of the leaves and about the inflorescences, rarely nearly or even quite glabrous. Leaves lanceolate, oblong or almost linear, irregularly and often acutely toothed, lobed or divided, sessile or petiolate, but almost always clasping the stem with toothed auricles. Flower-heads small, in a terminal corymb much more dense than in *E. quadridentata.* Involucre in the normal form about 3 lines long, of about 12 narrow bracts, often squarrose at the tips and surrounded by a few minute outer ones. Florets rather numerous, the females in 2 or more rows, with about 6 to 10 hermaphrodites in the centre. Achenes short, angular, shortly hirsute or glabrous.—Hook. f. Fl. Tasm. i. 219; *Senecio argutus*, A. Rich. Fl. Nov. Zel. 258, and Sert. Astrol. 104; *S. multicaulis*, A. Rich. Sert. Astrol. 105; *Erechthites lacerata*, F. Muell. in Linnæa, xxv. 117; *Senecio Lessoni*, F. Muell. Cat. Hort. Melb. 1858, 26.

N. S. Wales. Port Jackson, *R. Brown*, *Woolls*; New England, *C. Stuart*; Clarence river, *Beckler.*

Victoria. Wendu vale, *Robertson*; Yarra-Yarra, Port Phillip, mouth of the Glenelg, *F. Mueller.*

Tasmania. Not uncommon in waste places, *J. D. Hooker.*

S. Australia. Cudnaka, Onkaparinga, Kangaroo Island, *F. Mueller.*

W. Australia, *Drummond*, *5th Coll. n.* 375, also *n.* 13 (with narrower leaves sometimes entire).

The species is also in New Zealand.

Var. *microcephala.* Involucres only about 2 lines long but not narrower than in the typical form.—Flats near the Broadribb river, *F. Mueller* (*Herb. F. Muell.*).

Var. *dissecta.* Taller with the leaves more divided, once or almost twice pinnatifid, a few of the outermost florets sometimes obliquely split at the end but never in the heads examined really ligulate.—*E. Bathurstiana*, DC. Prod. vi. 297.—Rocky hills in the neighbourhood of Bathurst, *A. Cunningham*; Wimmera, *Dallachy.*

Senecio apargiæfolius, Walp. Linn. xiv. 309, or *Erechthites apargiæfolia*, Sond. in Linnæa, xxv. 524, from Lhotzky's specimens from Maneroo, appears to be *E. arguta*, although it is said to have a perennial rhizome. To the same species belong also probably *Senecio glomeratus*, Desf. Cat. Hort. Par. 121, or *E. glomerata* var. *subincisa*, DC. Prod. vi. 297, and *Neoceis microcephala*, Cass. (DC.), *Senecio pumilus*, Poir. Dict. Suppl. v. 130, or *E. pumila*, DC. Prod. vi. 297, and *Senecio pusillus*, A. Rich. Sert. Astrol. 99; DC. Prod. vi. 370, of which I have received from M. Decaisne a flower-head, in which the outer florets are certainly female and 4-toothed.

4. **E. mixta,** *DC. Prod.* vi. 297. Apparently perennial and tall, scabrous-pubescent with the divided leaves often cottony underneath of *E. arguta* var. *dissecta*, but with much longer flower-heads, the involucres exceeding 4 lines like those *E. hispidula* but much more slender, consisting of about 12 bracts, and the panicle loose like that of *E. quadridentata.*—*Senecio mixtus*, A. Rich. Sert. Astrol. 112. t. 36 (the leaves more divided than in our specimens); *E. picridioides*, Sond. and Muell. in Linnæa, xxv. 523.

N. S. Wales. Piper's Hill (in the interior?), *Fraser.*

S. Australia. Memory Cove, *R. Brown*; Murray river, near Moorundee, *F. Mueller*; Spencer's Gulf, *Warburton.*

The species requires further investigation from more perfect specimens.

5. **E. quadridentata,** *DC. Prod.* vi. 295. An erect herb more or less clothed with a white deciduous cottony wool, from 1 to above 2 ft. high, with a perennial rhizome. Leaves linear, linear-lanceolate or very rarely oblong-lanceolate, the radical ones sometimes petiolate, the stem leaves sessile, entire or with a few small distant teeth, the longer ones attaining 3 or 4 in. with or without small stem-clasping auricles. Flower-heads slender in a terminal corymbose panicle usually loose but sometimes more crowded.. Involucre narrow, about 4 lines long, of about 12 very narrow bracts. Female filiform florets 30 to 40 or more, the hermaphrodites in the centre few (not above 8). Achenes glabrous or papillose-pubescent, striate, usually slender and contracted at the top but very variable, from scarcely longer than in *E. arguta* to nearly twice as long, the terminal contraction amounting to a distinct beak or scarcely perceptible.—Steetz in Pl. Preiss. i. 483; Hook. f. Fl. Tasm. i. 219; *Senecio quadridentatus*, Labill. Pl. Nov. Holl. ii. 48. t. 194; *S. tenuiflorus*, Sieb. Pl. Exs.; *E. tenuiflora*, DC. Prod. vi. 296; *E. incana*, Turcz. in Bull. Mosc. 1851, ii. 85.

Queensland, *F. Mueller*; Moreton Bay, *Leichhardt*; Keppel Bay, *Thozet.*

N. S. Wales. Port Jackson or Blue Mountains, *Sieber, n.* 435; rocky hills near Bathurst, *A. Cunningham.*

Victoria. Wendu vale, *Robertson*; Wimmera, *Dallachy*; Station Peak, *Herb. F. Mueller.*

Tasmania. Table Mountain, Derwent river and Port Dalrymple, *R. Brown*; Gun Carriage Island, Bass's Straits, *Gunn.*

S. Australia. Spencer's Gulf, Third Creek, *F. Mueller*

W. Australia. Swan River, *Drummond, n.* 332, and *5th Coll. n.* 379; *Preiss, n.* 73, 126, *Oldfield*; Kalgan river, *Oldfield.*

The species is also in New Zealand.

Var. *glabrescens.* Less tomentose, the lower leaves petiolate, oblong, with a few coarse teeth, upper leaves linear and entire. *E. glabrescens*, DC. Prod. vi. 295.—Plains subject to irrigation south of Lake George, *A. Cunningham*; Lord Howe's Island, *Milne*; near Melbourne, *F Mueller, Adamson*; Circular Head, *Gunn.*—Nearly the same variety passing into the following one, Wimmera, *Dallachy.*

Var. *Gunnii.* Very woolly-white. Leaves mostly petiolate, oblong, entire with a few remote teeth.—*E. Gunnii*, Hook. f. in Hook. Lond. Journ. vi. 122, and Fl. Tasm. i. 220. t. 63.—Snowy River and Yarra-Yarra, *F. Mueller*; common on the summits of the Western Mountains, *Gunn.*

E. glandulosa, DC. Prod. vi. 295, from Lachlan river, *A. Cunningham*, or *Senecio glandulosus*, A. Cunn., appears to be a luxuriant form of *E. quadridentata.*

6. **E. hispidula,** *DC. Prod.* vi. 296 (?). A stout erect perennial of 1 to 2 ft. or rather more, glabrous or scabrous-pubescent and frequently with a little white cottony wool on the under side of the leaves. Leaves linear or lanceolate, entire, coarsely toothed or remotely pinnatifid, often petiolate, sometimes with stem-clasping auricles. Flower-heads larger than in *E. quadridentata*, in a terminal loose or compact corymbose panicle. Involucre 4 to 5 lines long or even more, thicker than in *E. quadridentata*, usually of 15 to 20 bracts, with several small outer ones. Florets very numerous, the females in several rows. Achenes slender and striate as in *E. quadridentata*, or rather shorter.—Hook. f. Fl. Tasm. i. 220; *Senecio hispidulus*, A. Rich. Sert. Astrol. 92 (from the description but scarcely the figure, t. 34); *S. squarrosus*, A. Rich. l. c. 107. t. 35 (from the description and plate); *E. Richardiana*, DC. Prod. vi. 297.

Victoria. Wendu vale, *Robertson*; Glenelg river, near Melbourne, Darebent Creek, Snowy River, Omeo plains, *F. Mueller*; Skipton, *Whan*; Wimmera, *Dallachy*.
Tasmania. Launceston, Circular Head, etc., *Gunn*.
S. Australia. Lofty Range, *F. Mueller*.
W. Australia, *Drummond*.

A. Richard's figure above mentioned, both in general habit and in the analytical details, seems to present a true *Senecio*, probably a form of *S. odorata*, but the description in the text of the flower-heads and florets, totally at variance with the plate, certainly refers to a true *Erechthites*, and is probably not taken from the specimen figured. De Candolle's character is entirely taken from A. Richard's.

84. GYNURA, Cass.

Involucre of nearly equal bracts in a single row with a few small outer ones round their base. Receptacle without scales. Florets all tubular, hermaphrodite, 5-toothed. Anthers obtuse at the base. Style bulbous at the base, the branches ending in long linear hairy points. Achenes striate. Pappus of numerous capillary bristles. Herbs, often somewhat succulent. Leaves alternate. Flower-heads terminal, solitary or loosely corymbose. Florets yellow.

A small genus, confined to the tropical and subtropical regions of the Old World, the only Australian species being the same as an Indian one.

1. **G. pseudochina,** *DC. Prod.* vi. 299. Rootstock perennial, thick and fleshy. Stems erect or ascending, 1 to 2 ft. high, somewhat succulent, leafy in the lower part only, ending in a long almost leafless peduncle bearing either a single flower-head or a loose corymb of 2 to 7 or 8 heads. Leaves petiolate, obovate ovate-oblong or lanceolate, coarsely toothed, rather thick, pubescent or nearly glabrous, 2 to 3 or even 4 in. long, the petiole often expanded at the base into 2 auricles or lobes. Flower-heads about 7 lines long. Involucre of about 12 narrow bracts with several short outer ones. *G. ovalis*, DC. and other synonyms adduced in Benth. Fl. Hongk. 189; *Senecio drymophilus*, F. Muell. in Trans. Phil. Inst. Vict. ii. 69.

Queensland. Bustard Bay, *Banks and Solander*; East coast, *R. Brown*; Wide Bay, *Leichhardt*; Brisbane river, rare, *W. Hill, F. Mueller*; Fort Cooper, near Isaac's River, *Bowman*; Port Denison, *Fitzalan*; Rockingham Bay, *Dallachy*.

A native of China and probably also of the Archipelago and various parts of India, but the specimens received are often cultivated. The Himalayan *G. nepalensis*, DC., ought, however, perhaps to be added to the synonyms as a more pubescent variety, the Australian ones being in this respect intermediate between that and the typical form.

85. SENECIO, Linn.

(Centropappus, *Hook. f.*)

Flower-heads homogamous and discoid or heterogamous and radiate. Involucre of nearly equal bracts apparently in a single row, linear or very rarely ovate, the margins often scarious and imbricate, with or rarely without a few small ones at the base passing into the bracts on the peduncles. Receptacle naked or pitted, the borders of the pits rarely toothed or produced into a few short scales. Florets of the ray when present female or rarely neuter, ligulate. Disk-florets tubular, hermaphrodite, 5-toothed. Anthers obtuse at the base, the upper portion of the filament often thickened. Style-branches truncate, usually bearing a tuft of minute hairs and very rarely a short obtuse appendage. Achenes striate or angular. Pappus of numerous simple scabrous or denticulate bristles. Herbs or very rarely shrubs, glabrous-pubescent or clothed with cottony wool. Leaves alternate, entire or divided, often rather thick. Flower-heads terminal, solitary, corymbose or paniculate. Florets usually yellow, rarely purple or white.

The largest genus among *Compositæ*, and ranging nearly over the whole world, although the individual species are often very local. Of the 28 Australian species 1 only extends to New Zealand, the others are all endemic. The rays are yellow in all of them except *S. leucoglossus*.

SERIES I. **Radiati.**—*Flower-heads radiate.*

Erect leafy annuals.
Flower-heads few, large. Involucres broadly campanulate. Ligulæ of the ray longer than the involucre.
Leaves entire. Involucral bracts united above the middle . 1. *S. Gregorii.*
Leaves pinnatifid with toothed lobes. Involucral bracts united at the base only . . . . 2. *S. platylepis.*
Flower-heads small. Involucres cylindrical. Ligulæ of the ray very small and rolled back.
Ray-florets 3, white (or purplish ?). Disk-florets under 10 . 19. *S. leucoglossus.*
Ray-florets 6 or more, very small, yellow. Disk-florets above 10 . . . . 20. *S. brachyglossus.*
Tufted or shortly creeping perennials with leaves chiefly radical. Flower-stems or scapes erect with 1 or rarely 3 to 5 heads. Involucres broad. Rays long, spreading.
Leaves ovate, not cordate, nearly entire, tuberculate or muricate above . . . . 3. *S. papillosus.*
Leaves ovate, cordate, nearly entire, glabrous or woolly underneath . . . . 4. *S. primulifolius.*
Leaves linear or oblong, entire crenate distantly toothed or pinnatifid . . . . 5. *S. pectinatus.*
Maritime much-branched spreading undershrub. Leaves mostly toothed. Involucres broad. Rays long spreading . . . . 6. *S. spathulatus.*
Glabrous erect shrubs (or in the first two species undershrubs ?).
Flower-heads few, large. Involucres broad. Rays long.
Leaves oblong or oblanceolate, the upper ones stem-clasping. Flower-heads (including the ray) nearly 3 in. diameter . . . . 7. *S. megaglossus.*
Leaves obovate, the upper ones lanceolate, cordate-auriculate at the base. Flower-heads (including the ray) under 2 in. diameter . . . . 8. *S. magnificus.*
Flower-heads smaller, corymbose. Involucres campanulate. Ligulæ scarcely longer than the involucre.
Leaves on long petioles, ovate, deeply-toothed . . . . 9. *S. insularis.*
Leaves sessile, broadly linear, entire . . . . 10. *S. centropappus.*
Herbaceous erect perennials (sometimes woody at the base). Flower-heads corymbose or paniculate, few or numerous.
Flower-heads large or middle-sized. Involucres campanulate, 3 to 6 lines long. Ligulæ longer than the involucre. Disk-florets numerous.
Leaves twice pinnate with filiform segments . . . . . 13. *S. capillifolius.*
Leaves linear, entire toothed or pinnatifid.
Flower-heads including the ray above 2 in. diameter . . 11. *S. macranthus.*

Flower-heads, including the ray, rarely exceeding 1 in. diameter. Involucral bracts prominently 2-ribbed . 12. *S. lautus.*
Leaves lanceolate, toothed . . . . 12. *S. lautus* var.
Leaves stem-clasping, the lower ones toothed at the end, the upper ones entire, broadly cordate-auriculate . . . . 16. *S. velleioides.*
Leaves all distinctly petiolate.
Leaves large, deeply pinnatifid or pinnatisect with few lanceolate segments . . . . 14. *S. vagus.*
Leaves ovate-lanceolate, toothed but undivided . . . 15. *S. amygdalifolius.*
Flower-heads small. Involucres cylindrical, 2 to 2½ lines long. Ligulæ not longer than the involucres. Disk-florets 10 to 15.
Stems 1 to 3 ft. high. Leaves linear or lanceolate. Flower-heads numerous in a terminal glabrous corymb . . . 17. *S. australis.*
Stems 6 to 10 in. high. Leaves linear. Flower-heads few, usually hoary . . . . 18. *S. Behrianus.*

SERIES II. **Discoidei.**—*Flower-heads small, discoid. Involucres cylindrical.*

Herbaceous perennials, sometimes woody at the base, or almost shrubby.
Involucral bracts about 12. Florets above 20.
Leaves narrow, mostly petiolate, without auricles. Panicle corymbose. Involucre above 2 lines long . . . . . 21. *S. Georgianus.*
Leaves deeply pinnatifid, very white underneath. Panicle corymbose. Involucre above 2 lines long . . . . . 22. *S. Gilberti.*
Leaves auriculate at the base, much-toothed. Panicles large, subpyramidal. Involucre under 2 lines long . . 23. *S. ramosissimus.*
Involucral bracts usually 8. Florets under 20.
Leaves oblong or lanceolate, sessile or petiolate, with a dilated stem-clasping base . . . . 24. *S. odoratus.*
Leaves linear or lanceolate, narrowed at the base or petiolate, without any or with very small auricles . . . . 25. *S. Cunninghamii.*
Leaves ovate or lanceolate, very white underneath, on long petioles not auriculate . . . . 26. *S. hypoleucus.*
Leaves once or twice divided into long linear, almost filiform segments . . . . 27. *S. anethifolius.*
Annuals.
Glabrous. Leaves linear, entire . . . . 28. *S. Gaudichaudianus.*
Slightly and loosely woolly. Leaves pinnatifid . . . . . * *S. vulgaris.*

SERIES I. RADIATI.—Flower-heads radiate, the ligulæ either long and spreading or small and rolled back, in *S. brachyglossus* sometimes not protruding from the involucre.

1. **S. Gregorii,** *F. Muell. in Pl. Greg., quoted Rep. Babb. Exped.* 14. Apparently an erect annual, under 1 ft. high, slightly branched, glabrous and glaucous. Leaves sessile, linear or linear-lanceolate, entire, 1 to 3 in. long. Peduncles dilated under the solitary rather large flower-head. Involucre campanulate, 3 to 4 lines or at length nearly ½ in. long, of about 10 to 12 rather broad bracts, concrete nearly to the apex, without any small outer ones. Ray-florets about 10 to 12, the ligulas long and spreading; disk-florets numerous, exceeding the involucre. Achenes striate, the more perfect ones 2½ lines long and densely hirsute, but some in the same heads often smaller and glabrous. Pappus at first short, but lengthening out to ¾ in.

Queensland. Maranoa river, *Leichhardt.*

N. S. Wales. From the Lachlan and Darling rivers to the Barrier Range, *Victorian and other Expeditions.*

Victoria. N.W. desert, *L. Morton;* Wimmera, *Dallachy.*

S. Australia. Cooper's Creek, *A. C. Gregory;* Wills' Creek, *Howitt's Expedition;* Fincke river, *M'Douall Stuart's Expedition.*

The species differs from all other *Senecios* known to me, in the involucre with the bracts almost as closely connate as in *Werneria* and *Euryops*, but in other respects the characters are entirely those of *Senecio.*

2. **S. platylepis,** *DC. Prod.* vi. 371. An erect slightly branched annual of 1 to 2 ft., glabrous or with a little loose wool. Leaves narrow, irregularly pinnatifid, with obtuse or acute coarsely-toothed lobes, the petioles often dilated and auriculate at the base. Flower-heads rather large, not numerous, in an irregular terminal leafy corymb, the peduncles dilated at the top. Involucre broadly campanulate, 4 to 5 lines long, the bracts rather broad, united at the base, without any or with 1 or 2 minute outer bracts. Ray-florets 12 to 20, the ligulæ long and spreading; disk-florets numerous. Achenes striate, pubescent or hirsute.

N. S. Wales. Low flat land at the foot of Peel's Range, *A. Cunningham, Fraser.*

3. **S. papillosus,** *F. Muell. in Trans. Phil. Inst. Vict.* ii. 69, *and in Hook. Kew Journ.* ix. 301. A perennial with a short thick nearly glabrous stock. Leaves mostly radical, spreading, petiolate, ovate, obtuse, narrowed at the base, nearly entire, under 1 in. long, thick; upper surface very scabrous or muricate with tubercles or short rigid bristles, otherwise glabrous or very slightly woolly underneath. Flower-stems or scapes simple, under 1 ft. high, often somewhat woolly, bearing a few small linear leaves or scales and a single rather large flower-head. Involucre of rather numerous narrow bracts with scarcely any small outer ones. Ray-florets 15 to 20, with long spreading ligulæ; disk-florets numerous, not exceeding the involucre.—Hook. f. Fl. Tasm. ii. 365.

Tasmania. Mount Lapeyrouse, *Oldfield.* This may possibly prove to be a variety of the New Zealand *S. bellidioides,* Hook. f.

4. **S. primulifolius,** *F. Muell. in Trans. Phil. Inst. Vict.* ii. 69. A perennial with a short thick glabrous or slightly woolly stock. Leaves chiefly radical, petiolate, cordate-ovate, obtuse, slightly sinuate-toothed or irregularly crenate, 1 to 3 in. long, rather thick, glabrous or with a little loose deciduous wool, pale underneath but not white. Flower-stems or scapes not exceeding 1 ft., single or nearly so, bearing a few small distant leaves or sometimes one larger one below the middle. Flower-heads 1 or 2 or rarely 3 or 4, rather large. Involucre broadly campanulate, the bracts about 4 lines long with a few small outer ones. Ray-florets about 10 to 12, the ligulæ long and spreading; disk-florets numerous, scarcely exceeding the involucre. Achenes glabrous, but not seen ripe.—Hook. f. Fl. Tasm. ii. 365.

Tasmania. Mount Lapeyrouse, *Oldfield.*

5. **S. pectinatus,** *DC. Prod.* vi. 372. A perennial with a tufted or shortly creeping stock, glabrous or rarely woolly under the inflorescence. Leaves chiefly radical or nearly so, linear or oblong, mostly obtuse and 1 to 2 in. long, shortly pinnatifid, crenate, remotely toothed or rarely quite entire, green on both sides. Flower-stems in the typical form simple and single-

headed, from a few in. to 1 ft. high, with a few leaves smaller and more acute than the radical ones. Flower heads rather large. Involucre broadly campanulate, the bracts often shortly united at the base, with a few small outer ones. Ray-florets 15 to 20 or even more, long and spreading; disk-florets very numerous, not exceeding the involucre. Achenes glabrous.—Hook. f. Fl. Tasm. i. 222.

Victoria. Mount Cobberas and Baw-Baw mountains, at an elevation of 6000 ft., *F. Mueller.*

Tasmania. Table Mountain, Derwent river, *R. Brown*; Mount Wellington, *Gunn*; Mount Lapeyrouse, *Oldfield.*

Var. *pleiocephalus.* Flower-heads rather smaller, 3 to 5 together in a loose terminal corymb.—*S. leptocarpus*, DC. Prod. vi. 372; Hook. f. Fl. Tasm. i. 222. t. 64 (representing an unusually large-leaved specimen).—Mount Wellington, *Gunn*; Mount Sorrel, *Milligan*; Mount Lapeyrouse, *Oldfield.*

6. **S. spathulatus,** *A. Rich. Sert. Astrol.* 125. Diffuse and much-branched, said to be suffruticose. Leaves from narrow-oblong to almost obovate, irregularly toothed or crenate, the lower ones narrowed into a petiole, the others stem-clasping and often auriculate, all rather thick and fleshy, mostly ¾ to 1½ in. long. Flower-heads rather large, in an irregular leafy corymb. Involucre campanulate, the bracts about 4 lines long, with a few very small outer ones. Ray-florets about 12 to 20, the ligulæ long and spreading. Disk-florets numerous, exceeding the involucre. Achenes quite glabrous in some specimens, pubescent in others.—DC. Prod. vi. 373; Hook. f. Fl. Tasm. i. 222.

N. S. Wales. Sandy seashores, Port Jackson, *R. Brown*; Bondee Bay, *Leichhardt*, *R. Cunningham?* (with pubescent achenes).

Victoria. Mouth of Snowy River, *F. Mueller* (with glabrous achenes).

Tasmania. King's Island, *R. Brown*, Woolnorth, *Gunn*; Macquarrie Harbour, *Milligan*; straits of Dentrecastreaux (*Lesson*) (with pubescent achenes).

S. anacampserotis, DC. Prod. vi. 374, from Port Jackson, *Fraser*, appears, from the description, to be the same species.

7. **S. megaglossus,** *F. Muell. in Linnæa*, xxv. 419. An erect much-branched glabrous and glaucous shrub (or under-shrub?). Leaves oblong or oblanceolate, entire or with a few minute teeth, often 3 to 4 in. long, the lower ones narrowed at the base, the upper ones sessile and stem-clasping. Flower-heads few, very large, the peduncles thickened upwards. Involucre broadly campanulate, the bracts 8 to 9 lines long, without any or very few small outer ones. Pits of the receptacle with jagged margins, often produced into short points or scales. Ray-florets 15 to 20, the ligulæ spreading to a diameter of nearly 3 in. Disk-florets numerous, not exceeding the involucre. Achenes glabrous, Pappus-bristles minutely serrulate.—Sond. in Linnæa, xxv. 527.

S. Australia. Barren hills near the Burra mines and rocks on the Broughton river, *F. Mueller.*

8. **S. magnificus,** *F. Muell. in Linnæa*, xxv. 418. An erect glabrous and glaucous shrub (or undershrub?). Lower leaves obovate-oblong, coarsely and acutely toothed, narrowed at the base, the upper ones lanceolate or ovate-lanceolate, deeply cordate-auriculate, stem-clasping and sometimes slightly de-

current, entire or nearly so, the larger ones 1½ to 2 in. long. Flower-heads rather large, in a loose terminal leafless corymb. Peduncles scarcely dilated. Involucre broadly campanulate, the bracts 4 to 5 lines long, without any or with very minute outer ones. Receptacle not jagged. Ray-florets about 8 to 12, the ligulæ long and spreading; disk-florets numerous, scarcely exceeding the involucre. Achenes pubescent.—Sond. in Linnæa, xxv. 526.

Victoria. Grampians near Mount Zero, *Fisher*; Wimmera, *Dallachy*.

S Australia. Cudnaka, *F. Mueller*; Flinders Range, *Howitt's Expedition, also in M'Douall Stuart's Collection.*

9. **S. insularis,** *Benth.* A low erect branching, perfectly glabrous shrub. Leaves on long petioles, ovate, acute, deeply toothed, narrowed at the base, 2 to 4 in. long. Flower-heads not large, rather numerous, in a leafless corymb shorter than the leaves. Involucre narrow-campanulate, of about 8 bracts 3 to 4 lines long, with very few minute outer ones. Ray-florets 3 or 4, the ligulæ narrow, spreading but (without the tube) about the length of the involucre; disk-florets about 12, shortly exceeding the involucre, the corolla-lobes narrow. Achenes glabrous.

N. S. Wales. Lord Howe's Island, frequent, *Milne*; on the ascent of Mount Ligbird, *M'Gillivray*. Very unlike any other Australian species, but approaching in several respects the New Zealand *S. glastifolius*.

10. **S. centropappus,** *F. Muell. Cat. Hort. Melb.* 1858, 26. An erect, glabrous, branching shrub, attaining 8 to 10 ft. Leaves rather crowded at the ends of the branches, sessile, broadly linear, mostly obtuse, quite entire, 2 to 3 in. long. Flower-heads not large, in small ovate panicles at the ends of the branchlets of a general somewhat corymbose leafy panicle. Involucre broadly campanulate, of about 8 ovate very obtuse bracts, 2 to 2½ lines long, with more scarious and fringed margins than in any other species, with very few small outer ones. Ray-florets 4 to 6, the ligulæ spreading, although scarcely longer (without the tube) than the involucre; disk-florets about 10 to 12, exceeding the involucre. Achenes glabrous. Pappus-bristles very prominently denticulate and almost plumose at the end.—*Centropappus Brunonis*, Hook. f. in Hook. Lond. Journ. vi. 124; Fl. Tasm. i. 225. t. 65.

Tasmania. Table Mountain, Derwent river, *R. Brown*; above the limits of the forests, on Mount Wellington, at an elevation of 3500 to 4000 ft., *Gunn*, *Oldfield*. Although very different in habit from other Australian species, it resembles in this respect some of the Andine ones. The involucral bracts are broader and more obtuse than in any other species I know, and the prominently denticulate bristles of the pappus are also more marked perhaps than in any others, but the inflorescence, flowers, and fruit are, in all other respects, quite those of *Senecio*, to which F. Mueller appears to have been right in uniting it.

11. **S. macranthus,** *A. Rich. Sert. Astrol.* 126. An erect glabrous perennial, attaining about 4 ft. Lower leaves not seen, upper ones long-linear or linear-lanceolate, with long points, entire or with a few remote teeth, narrowed into a petiole but with acuminate auricles at its base. Flower-heads large, in a loose terminal corymb. Involucre broadly campanulate, the bracts 4 to 5 lines long, prominently 2-ribbed, as in *S. lautus*, with a few small outer ones. Ray-florets rather numerous, the long ligulæ spreading to

a diameter of nearly 2 in. Achenes apparently glabrous, but not seen ripe.—DC. Prod. vi. 374.

N. S. Wales. In the N.W. interior, *Fraser.* Allied to *S. lautus*, but the flower-heads very much larger.

12. **S. lautus,** *Forst. Prod.* 91. An erect glabrous perennial, from 1 to 3 or even 4 ft. high. Leaves usually linear or linear-lanceolate, entire remotely toothed or deeply pinnatifid, rarely broadly lanceolate, either narrowed into a petiole or, especially when broad, dilated and auriculate or stem-clasping at the base. Flower-heads not very large, several in a loose terminal irregular corymb. Involucre campanulate, the bracts 3 to 4 lines long, more prominently 2-ribbed than in most Australian species, with several very small outer ones. Ray-florets about 10 to 15, the ligulæ spreading to from ¾ to 1 in. diameter; disk-florets numerous, scarcely exceeding the involucre. Achenes glabrous or pubescent. Hook. f. Fl. Tasm. i. 221; *S. tripartitus*, A. Rich. Sert. Astrol. 114; DC. Prod. vi. 372; *S. crithmifolius*, A. Rich. l. c. 116; DC. l. c. 372; Steetz in Pl. Preiss. i. 485; *S. pinnatifolius*, A. Rich. l. c. 117; *S. carnulentus*, DC. l. c. 372; Steetz in Preiss. i. 484; *S. rupicola*, A. Rich. l. c. 119. t. 37; DC. l. c. 372; *S. Macquariensis*, DC. l. c. 372.

Queensland. Hervey's Bay, Sandy Cape, *R. Brown*; Suttor river and Moreton Island, *F. Mueller*; on the upper Maranoa, *Mitchell.*

N. S. Wales. Port Jackson, *R. Brown*, *Woolls*; northward to Hastings river and Mount Mitchell. *Beckler*; New England, *C. Stuart*; southward to Twofold Bay, *F. Mueller*; in the interior to Lake George, *Herb. Hooker*; Macquarrie river, *Fraser*; Lachlan and Darling rivers, *Victorian and other Expeditions.*

Victoria. From the Glenelg to Gipps' Land, and in the interior to the Grampians and Murray river, *F. Mueller* and others.

Tasmania. Port Dalrymple, *R. Brown*; abundant, especially near the coasts, *J. D. Hooker.*

S. Australia. From the Murray to St. Vincent's Gulf and Kangaroo Island, *F. Mueller* and others; Cooper's Creek, *Wheeler.*

W. Australia. King George's Sound, *R. Brown*; from the South coast to Vasse and Swan rivers, *Drummond, n.* 28 *and* 380, *Preiss, n.* 108, 109, 110, 112, 114, *Oldfield*, and others; and eastward to Cape Legrand and Esperance Bay, *Maxwell.*

S. Endlicheri, DC. Prod. vi. 373, appears from the character given to be the same species, so also is *S. ciliolatus*, DC. Prod. vi. 374, judging from Cunningham's own imperfect specimens, which however show that it is not an annual. The species is also in New Zealand.

Var. *lanceolatus.* Leaves rather broadly lanceolate, deeply and acutely toothed, sessile and stem-clasping.—Port Phillip, *Gunn, Adamson.*

13. **S. capillifolius,** *Hook. f. in Hook. Lond. Journ.* vi. 123, *and Fl. Tasm.* i. 222. *t.* 64. Apparently a perennial, quite glabrous. Leaves as in *S. anethifolius*, crowded, deeply divided into long, almost filiform segments, either entire or again divided into similar segments. Flower-heads and inflorescence of the smaller forms of *S. lautus*, the corymb compact. Involucre campanulate and prominently ribbed as in that species. Florets the same. Achenes pubescent.

Tasmania, *Gunn.* Only known from a single specimen, showing the foliage of *S. anethifolius*, with the inflorescence and flowers of *S. lautus.*

14. **S. vagus,** *F. Muell. in Trans. Phil. Soc. Vict.* i. 46, *and in Hook. Kew Journ.* viii. 162; Pl. Vict. t. 46. A tall, erect, glabrous perennial. Leaves petiolate, broadly lanceolate, deeply pinnatifid or pinnately divided

into few lanceolate entire or slightly toothed lobes or segments, of which the middle ones usually large, the upper and lower ones small, the whole leaf sometimes 5 or 6 in. long, the upper leaves smaller and less divided, and on side-branches often all entire or with only one deep lobe on each side, all of a thinner consistence than in most species, the petioles not auriculate. Flower-heads rather large in an irregular corymb. Involucre campanulate, the bracts 4 to 5 lines long, with few smaller outer ones. Ray-florets about 10 to 15, the ligulæ long and spreading; disk-florets numerous, shortly exceeding the involucre. Achenes glabrous.

N. S. Wales. Grose river, *R. Brown*; Hastings and Clarence rivers and Mount Mitchell, *Beckler*; swamps near Port Jackson, *Lowne*, *Clowes*; Blue Mountains, *Miss Atkinson*; Bent's Basin and near Camden, *Woolls*.

Victoria. Shady moist valleys of the Dandenong ranges, of Mount Disappointment and on Delatite river, *F. Mueller*.

15. **S. amygdalifolius,** *F. Muell. Fragm.* i. 232. A tall, erect, glabrous perennial. Leaves petiolate, ovate-lanceolate to oblong-lanceolate, acute and acutely and coarsely serrate, 2 to 4 in. long. Flower-heads rather large and few in a loose corymb or smaller and more densely corymbose. Involucre narrow-campanulate, the bracts narrow, 4 to 5 lines long, with few small outer ones. Receptacle pitted, with the edges of the pits occasionally produced into short teeth or very rarely into a small scale. Ray-florets rarely above 6 and often only 3 or 4, rather long and spreading, disk-florets shortly exceeding the involucre. Achenes glabrous.

N. S. Wales. Hastings river, *Beckler*; Port Macquarrie, *Backhouse*, also *Vicary*.

16. **S. velleioides,** *A. Cunn. in DC. Prod.* vi. 374. An erect glabrous perennial, attaining 3 ft. or sometimes more. Leaves ovate-oblong or lanceolate, the lower ones shortly petiolate, the intermediate ones 2 to 4 in. long, coarsely serrate, narrowed below the middle but sessile and stem-clasping with broad rounded auricles, the upper ones cordate-ovate or lanceolate, entire, broadly stem-clasping. Flower-heads not large and often rather numerous, in a terminal corymb. Involucre campanulate, the bracts 3 to nearly 4 lines long, with a very few small outer ones. Ray-florets usually about 10 or rather fewer, spreading and rather long; disk-florets scarcely exceeding the involucre. Achenes glabrous or slightly pubescent.—Hook. f. Fl. Tasm. i. 223.

N. S. Wales. Rocky hills to the north of Bathurst, *A. Cunningham*; Nepean river, *R. Cunningham*; Blue Mountains, *Miss Atkinson*; Twofold Bay, *F. Mueller*.

Victoria. Wooded hills, Wilson's Promontory, Apollo Bay, Upper Barwan river, Dandenong range, etc., *F. Mueller*.

Tasmania. Derwent river, *R. Brown*; damp shaded alpine parts of the colony, growing in very rich soil, *J. D. Hooker*.

17. **S. australis,** *Willd. Spec.* iii. 1981. A tall perennial, either quite glabrous or the under side of the leaves slightly cottony-white. Leaves, in the typical form, linear or lanceolate, sessile, quite entire or the base dilated into small acuminate auricles, the larger leaves 5 to 6 in. long. Flower-heads small and numerous, in a large terminal corymb. Involucre cylindrical, of about 10 to 12 bracts, not 2 lines long, with scarcely any small

outer ones. Ray-florets 4 to 6, the ligula (without the tube) not longer than the involucre; disk-florets about 10 to 12, exceeding the involucre. Achenes glabrous or pubescent.—A. Rich. Sert. Astrol. 131. t. 39; DC. Prod. vi. 374; Hook. f. Fl. Tasm. i. 223; *S. dryadeus*, Sieb. Pl. Exs.; *S. linearifolius*, A. Rich. Sert. Astrol. 129; DC. Prod. vi. 374; *S. cinerarioides*, A. Rich. l. c. 128; *S. Richardianus*, DC. l. c. 374.

N. S. Wales. Port Jackson, *R. Brown*, *Sieber*, *n.* 337.

Victoria. Common about Melbourne, *Adamson* and others; Emu Creek, *Whan*; Snowy River and Lake King, *F. Mueller*.

Tasmania. Port Dalrymple and islands of Bass's Straits, *R. Brown*; common throughout the colony, *J. D. Hooker*.

S. Australia. Loddon river, *F. Mueller*.

The New Zealand *S. angustifolius*, Forst., referred here by Willdenow and after him by De Candolle and others, is probably the same as *S. lautus*. The *S. australis* of modern authors, has not, as far as I am aware of, been found in New Zealand.

Var. *macrodontus*. Leaves lanceolate, more or less serrate, usually whitish underneath, narrowed into a petiole, most frequently auriculate at the base.—*S. persicifolius*, A. Rich. Sert. Astrol. 123; *S. macrodontus*, DC. Prod. vi. 373. Port Jackson, *R. Brown*; Blue Mountains, *Miss Atkinson*; New England, *C. Stuart*; Hastings and Macleay rivers, *Beckler*.

This may be a distinct species, but I have reduced it to *S. australis*, on the authority of F. Mueller. *S. pauciligulatus*, A. Rich. Sert. Astrol. 121. t. 38; DC. Prod. vi. 373, is a form of this *S. macrodontus*, with broader leaves not auriculate, and a specimen from the Cobberas mountains in Herb. F. Mueller, has the same broad leaves, but sessile and broadly auriculate at the base.

18. **S. Behrianus,** *Sond. et Muell. in Linnæa*, xxv. 527. A low perennial or almost an undershrub, with a shortly creeping woody rhizome and erect stems, usually 6 to 10 in. high, more or less hoary-tomentose, especially about the inflorescence. Leaves linear, with revolute margins, entire or remotely toothed, rarely above 1 in. long, and the upper ones small. Flower-heads rather small, few in a loose terminal corymb. Involucre cylindrical, of about 10 prominently 2-ribbed bracts, 2 to 2½ lines long, and a very few small outer ones. Ray-florets about 6 to 8, the ligulæ (without the tube) scarcely so long as the involucre; disk-florets 10 to 15, exceeding the involucre. Achenes pubescent.

N. S. Wales. Darling river, *Dallachy*.

S. Australia. Murray river near Moorundi and Wood's Station, *F. Mueller*.

19. **S. leucoglossus,** *F. Muell. Fragm.* ii. 15. An erect glabrous annual of 1 to 2 ft. Leaves few, ovate or lanceolate, acutely and irregularly toothed and lobed, the lower ones petiolate without auricles, the next also petiolate but the petioles dilated into acutely-toothed stem-clasping auricles, the upper ones sessile with broad stem-clasping auricles. Flower-heads small, in small corymbs forming a large very loose panicle. Involucre cylindrical, of about 8 bracts, scarcely 2 lines long, without any or only 1 or 2 small outer ones. Ray-florets about 3, the ligula white (or pale purple?) short and often rolled back. Disk-florets usually under 10, slightly exceeding the involucre. Achenes glabrous or papillose-pubescent.

W. Australia, *Drummond*, *n.* 29; Harvey river, *Oldfield*.

20. **S. brachyglossus,** *F. Muell. in Linnæa*, xxv. 525. A slender

annual, 6 in. to a foot or rarely 1½ ft. high, glabrous or sprinkled with a few short white hairs. Leaves linear with a few small distant teeth or irregularly pinnatifid with few distant linear lobes. Flower-heads small, solitary or clustered at the ends of the branches of a loose irregular panicle. Involucre cylindrical, of about 8 bracts, about 2 lines long, with 1 or 2 minute outer ones. Ray-florets about 6, the ligulæ oblong but very short and rolled back. Disk-florets 10 to 12, slender, 5-toothed, scarcely exceeding the involucre. Achenes densely pubescent, those of the ray usually longer than those of the disk.—*Erechthites glossantha*, Sond. in Linnæa, xxv. 524.

N. S. Wales. Darling river, *Victorian Expedition*; between Stokes' Range and Cooper's Creek, *Wheeler*.

Victoria. Near Melbourne, *Adamson*; Weadu valley, *Robertson*; Wimmera, *Dallachy*.

S. Australia. Near Adelaide, *F. Mueller*.

W. Australia. Swan River, *Drummond, n.* 44, *Preiss* (no *number*); Murchison river, *Oldfield*.

Var. ?) *major*. Flower-heads larger. Involucres about 3 lines long with about 12 bracts. Florets also more numerous. Point Nepean and Wilson's Promontory, *F. Mueller*, also in W. Australia, *Drummond, n.* 377. This variety, perhaps a distinct species, is only to be distinguished from the European *S. sylvaticus* by the less divided leaves.

Var. ?) *elatior*. Tall and stout (the lower part of the plant not seen). Leaves pinnatifid, with linear or lanceolate unequal lobes, the larger ones denticulate. Flower-heads numerous in a large terminal corymb, otherwise as in the typical form. Achenes glabrous.—Blue Mountains, *Herb. F. Mueller*.

SERIES II. DISCOIDEI.—Flower-heads small, discoid. Involucre cylindrical.

21. **S. Georgianus,** *DC. Prod.* vi. 371. An erect rigid perennial of 1 to 2 ft., covered when young with white cottony wool which usually persists on the under side of the leaves, or rarely nearly glabrous. Leaves linear or lanceolate, entire or scarcely toothed, rarely almost pinnatifid, 1 to 3 or even nearly 4 in. long, usually narrowed into a petiole which is sometimes slightly dilated at the base but not auriculate. Flower-heads rather small, in a corymbose panicle, but fewer and larger than in *S. odoratus*, varying in size in different specimens. Involucre cylindrical, of about 12 bracts, from a little more than 2 lines to above 3 lines long, the coloured reflexed tips more prominent than in most species. Florets above 30, all tubular, exceeding the involucre. Achenes pubescent.—*S. barkhausioides*, Turcz. in Bull. Mosc. 1851, ii. 86; *S. helichrysoides*, F. Muell. in Trans. Vict. Inst. 1855, 39.

N. S. Wales. Clarence river, *Beckler* (a drawn-up imperfect specimen); banks of Lake George, *A. Cunningham*.

Victoria. Grassy subalpine ridges, Macalister river, Mitta-Mitta Range, Lake Omeo, *F. Mueller*.

Tasmania. Derwent river, *R. Brown* (appears to be this species).

S. Australia. Salt Gulley, *Behr*; hills about Wheal Barton mines, *F. Mueller*.

W. Australia, *Drummond, 5th Coll. n.* 378.

This species has the foliage and habit nearly of *Erechthites quadridentata*, but the involucres are much larger and the florets all hermaphrodite and 5-toothed.

22. **S. Gilberti,** *Turcz. in Bull. Mosc.* 1851, i. 208. A tall erect perennial, the young stems clothed with a deciduous white wool. Leaves

sessile and stem-clasping, lanceolate, deeply pinnatifid, with lanceolate often toothed lobes, woolly-white when young, the wool persisting on the under side, the larger ones 2 to 4 in. long. Flower-heads small, numerous, in a corymbose panicle. Involucre cylindrical, 2 to 2½ lines long, of about 12 very narrow bracts with a few small outer ones. Florets above 20, all tubular, rather longer than the involucre.

W. Australia. Swan River, *Drummond*, *n.* 325. This has the aspect of *Erechtites arguta*, but is a true *Senecio*. The flower-heads are much larger than in *S. ramosissimus*, smaller than in *S. Georgianus*.

23. **S. ramosissimus,** *DC. Prod.* vi. 371. A stout erect perennial of 2 to 5 ft., usually glabrous. Leaves broadly lanceolate on the main stem and often 4 to 5 in. long, narrower or narrowed below the middle on the side branches, prominently and acutely toothed, sessile and clasping the stem with acutely toothed auricles. Flower-heads small and numerous, in a large more or less pyramidal panicle. Involucre almost campanulate, of about 12 bracts, nearly 2 lines long, almost without small outer ones. Florets above 20, all tubular, slightly exceeding the involucre. Achenes glabrous, much smaller and with a less prominent terminal ring than in *S. odoratus*. *S. cygnorum*, Steetz in Pl. Preiss. i. 483.

W. Australia. King George's Sound and adjoining districts, *R. Brown*, *A. Cunningham*, *Oldfield*; Swan River, *Fraser*, *Drummond*, *n.* 28, 328, *Preiss*, *n.* 70, *Oldfield*.

24. **S. odoratus,** *Hornem.*; *DC. Prod.* vi. 371. A stout erect perennial of 2 to 3 ft., glabrous or rarely with a loose white deciduous wool on the under side of the leaves. Leaves oblong or lanceolate, irregularly toothed, often narrowed below the middle and sometimes almost petiolate, but dilated and stem-clasping, with toothed auricles at the base, attaining 2 to 4 in. in length, the upper ones and those of the side branches sometimes almost linear. Flower-heads small and numerous, in dense corymbs at the ends of the branches, forming usually a large corymbose panicle. Involucre cylindrical, rarely exceeding 2 lines, of about 8 bracts, with 1 or 2 small outer ones rarely wanting. Florets about 10 to 12, all tubular, considerably longer than the involucre when fully out. Achenes slightly pubescent, the pappus inserted on a callous ring more prominent than in the allied species.—A. Rich. Sert. Astrol. 109; Hook. f. Fl. Tasm. i. 223; *Cacalia odorata*, Desf. Hort. Par. 165 and 400, according to DC.

Victoria. Wando vale, *Robertson*; Skipton, *Whan*; Wilson's Promontory, *F. Mueller*; Glenny Islands, *Wilhelmi*.

Tasmania. Port Dalrymple, King's Island, *R. Brown*; Woolnorth, *Gunn*; Macquarrie Harbour, *A. Cunningham*.

S. Australia. Memory Cove, Port Lincoln, *R. Brown*; Mount Kaiserstuhl, Tanunda Creek, *F. Mueller*; Kangaroo Island, *R. Brown*, *Baudin's Expedition*, *F. Mueller*.

J. D. Hooker in the Handb. N. Zeal. Fl. 160, refers to this species his *S. Banksii*, Fl. N. Zeal. ii. 146, which has indeed the foliage of luxuriant specimens of *S. odoratus*, but appears to me quite distinct in the radiate flower-heads and in the shape of the involucre and florets, which are more like those of a miniature *S. lautus*.

25. **S. Cunninghamii,** *DC. Prod.* vi. 371. This is now considered by F. Mueller as a variety of *S. odoratus*, of which it has the flower-heads and florets. It is however smaller and more woody at the base, the stems

more branched, ascending or erect, often under 1 ft. and rarely above 2 ft. high. Leaves linear or lanceolate, entire or coarsely toothed, narrowed into a short petiole without any or only with very minute auricles at the base. Flower-heads usually fewer than in *S. odoratus*, in small corymbs.—*S. brachylænus*, DC. Prod. vi. 370.

N. S. Wales. Lake George and Lachlan river, *A. Cunningham*; Macquarrie marshes, Duck Creek and Darling river, *Mitchell*; Lachlan and Darling rivers, *Victorian and other Expeditions.*

Victoria. Murray river, *Hergolt*; Wimmera, *Dallachy.*

S. Australia. Murray river to St. Vincent's Gulf and Flinders range, *F. Mueller*; Cooper's Creek, *Howitt's Expedition*; in the interior, *M'Douall Stuart's Expedition.*

W. Australia. Murchison river, *Oldfield, Drummond, 6th Coll. n.* 149.

26. **S. hypoleucus,** *F. Muell. Herb.* (as a var. of *S. odoratus*). A tall and erect perennial, the base of the stems apparently more woody than in *S. odoratus*, of which it has the inflorescence and florets and of which F. Mueller believes it to be a variety. Leaves ovate-lanceolate or lanceolate, 2 to 3 in. long, entire or slightly toothed, abruptly contracted into a long petiole not auriculate at the base, all very white and cottony underneath. Corymbs usually very dense.—*S. odoratus*, var. *petiolatus*, Sond. in Linnæa, xxv. 526.

Victoria. Wimmera, *Dallachy.*

S. Australia. Mount Lofty, *Wilhelmi, Whittaker.*

27. **S. anethifolius,** *A. Cunn. in DC. Prod.* vi. 371. A glabrous branching shrub (or undershrub?) attaining 4 or 5 ft. Leaves crowded, pinnately divided into long narrow linear or almost filiform segments, either entire or again bearing a few equally narrow lobes. Flower-heads small, numerous, in a very compact corymb. Involucre cylindrical, above 2 to nearly 3 lines long, of about 8 bracts, without any or with 1 or 2 very small outer ones. Florets about 10 to 12, all tubular, longer than the involucre. Achenes glabrous or scabrous-pubescent.—*S. angustilobus*, F. Muell. in Linnæa, xxv. 418; *S. angustifolius*, Sond. l. c. 526.

N. S. Wales. Mount Caley and Peel's Range. *A. Cunningham.*

S. Australia. Summits of hills near Cudnaka, *F. Mueller.*

28 (?) **S. Gaudichaudianus,** *A. Rich. Sert. Astrol.* 98. An erect glabrous annual of about 6 in. Leaves linear and entire or the lower ones petiolate oblong and obscurely toothed. Flower-heads few, in a small terminal corymb or almost solitary. Involucre cylindrical, nearly 3 lines long, of about 8 bracts with very few small outer ones. Florets all tubular and hermaphrodite, slightly exceeding the involucre. Achenes pubescent. DC. Prod. vi. 370.

N. S. Wales. Port Jackson (*Gaudichaud*). This is a very doubtful species, and may possibly prove to be a small state of *S. brachyglossus*, in which the small ligulæ have been overlooked. Decaisne informs me that the authentic specimen in Herb. Mus. Par. had suffered much from sea water, and was not in a state to ascertain the point. In a small one in Herb. F. Mueller, which otherwise agrees with the description, there appear to be no ligulæ, but the specimen is very imperfect and they may have fallen away.

S. vulgaris, Linn.; *DC. Prod.* vi. 341 (the common European *Groundsel*). An annual of 6 in. to a foot, bearing a little loose cottony wool, with irregularly pinnatifid and toothed leaves, and small flower-heads with the florets all tubular and hermaphrodite, and involucres

of about 20 bracts, has appeared as an introduced weed in some parts of N. S. Wales *Woolls.*

86. BEDFORDIA, DC.

Flower-heads homogamous and discoid. Involucre of nearly equal bracts apparently in a single row, the margins imbricate and scarious. Receptacle pitted. Florets all tubular, hermaphrodite, 5-toothed. Anthers obtuse at the base. Style branches somewhat flattened, very obtuse but not truncate, papillose from below the middle. Achenes angular or striate. Pappus of numerous denticulate bristles.—Shrubs more or less stellate-tomentose. Leaves alternate, entire or irregularly crenate. Flower-heads axillary, solitary or in clusters or dense panicles shorter than the leaves. Florets yellow.

The genus is limited to the two species endemic in Australia. F. Mueller has proposed to unite it with *Senecio*, but the stellate tomentum and axillary inflorescence are quite unknown in that extensive genus, and the style is almost as much that of some *Astereæ* as of *Senecio*. The same style occurs it is true in the Andine *S. iodopappus*, Sch.-Bip., but that species, as observed by Weddell, is anomalous also in several other respects.

Leaves lanceolate, mostly 3 to 5 in. long. Flower-heads in axillary clusters
or panicles . . . . 1. *B. salicina.*
Leaves linear, rarely above 2 in. long. Flower-heads solitary or 2 together 2. *B. linearis.*

1. **B. salicina,** *DC. Prod.* vi. 441. A shrub attaining sometimes 12 to 14 ft., the branches, under side of the leaves, and involucres covered with a stellate tomentum either close or loose and almost floccose. Leaves lanceolate, obtuse, 3 to 5 in. long, entire or irregularly crenate, narrowed into a petiole, glabrous above when full grown, the reticulate veinlets impressed in the upper surface, prominent underneath. Flower-heads in axillary dense panicles much shorter than the leaves. Involucral bracts about 8, 2 to 2½ lines long, obtuse or scarcely acuminate. Achenes glabrous, striate, with 4 or 5 prominent ribs.—Hook. Lett. on Duke Bedf. with a fig.; Hook. f. Fl. Tasm. i. 224; *Cacalia salicina*, Labill. Pl. Nov. Holl. ii. 37. t. 179; Bot. Reg. t. 923; *Culcitium salicinum*, Spreng. Syst. iii. 431; *Senecio Bedfordii*, F. Muell. Cat. Hort. Melb. 1858, 26.

Victoria. Bullaruok forest, *Whan;* Muddy Creek, Corner Inlet, *Wilhelmi.*

Tasmania. Port Dalrymple and Derwent river, *R. Brown;* common on the skirts of forests and in the brush, *J. D. Hooker.*

2. **B. linearis,** *DC. Prod.* vi. 441. A shrub of about 4 to 6 ft., the branches, under side of the leaves, and inflorescence whitish with a stellate or floccose tomentum. Leaves rather crowded, linear, obtuse, entire, with revolute margins, scarcely petiolate, coriaceous, glabrous above, the veins inconspicuous, varying in size from all under ½ in. long in some specimens to mostly about 2 in. in others. Flower-heads solitary or 2 together, nearly sessile and usually larger than in *B. salicina.* Flowers otherwise as in that species.—Hook. f. Fl. Tasm. i. 225; *Cacalia linearis*, Labill. Pl. Nov. Holl. ii. 36. t. 178; *Culcitium lineare*, Spreng. Syst. iii. 431; *Senecio Billardieri*, F. Muell. Cat. Hort. Melb. 1858, 26.

Tasmania. Port Dalrymple, *R. Brown*, common especially in the central mountainous and southern parts of the island in rocky soil, *J. D. Hooker.*

TRIBE X. CALENDULACEÆ. – Leaves alternate or radical. Flower-heads usually heterogamous, the ray-florets ligulate, female or rarely neuter, the disk-florets tubular, hermaphrodite but sterile or rarely fertile, and very rarely in species not Australian, the heads homogamous. Receptacle pitted, the margins of the pits rarely produced into irregular scales or bristles. Anthers usually sagittate at the base but scarcely tailed. Style-branches, in the disk-florets, more or less concrete and thickened at the base.

This tribe, which is chiefly S. African, has the style nearly of *Cynarocephalæ*, and on that account has been associated with them under the general name of *Cynareæ*, but the habit and other characters appear much more to connect it with *Senecionidæ* and some *Mutisiaceæ*.

87. CYMBONOTUS, Cass.

Involucre campanulate, at length hemispherical, the bracts imbricate in several rows, the inner ones broader. Receptacle pitted, the margins of the pits often produced into rigid points or deciduous scales. Florets of the ray ligulate, female; disk-florets tubular, hermaphrodite, sometimes sterile. Anthers shortly sagittate but scarcely tailed. Style-branches rather broad, less concrete than usual in the tribe but erect or scarcely spreading. Achenes oblong, glabrous, smooth on the inner face, with 3 or 5 prominent ribs on the back and sides. Pappus none.—Perennial with toothed or pinnatifid radical leaves and single-headed leafless scapes.

The genus is limited to the single species endemic in Australia.

1. **C. Lawsonianus,** *Gaudich. in Freyc. Voy. Bot.* 462. *t.* 86. A perennial either stemless or with very short tufted stems. Leaves radical, spreading, on long petioles, ovate, coarsely toothed and 2 or 3 in. long or longer and lyrately pinnatifid, thin, green and somewhat scabrous above, cottony-white underneath. Scapes or peduncles shorter than the leaves and sometimes very short, cottony-white as well as the involucres. Involucre at length about ½ in. diameter. Ray-florets yellow, spreading; disk-florets shorter than the involucre.—DC. Prod. vi. 491; Sond. in Linnæa, xxv. 528; Hook. f. Fl. Tasm. i. 226; *C. Preissianus*, Steetz in Pl. Preiss. i. 486.

N. S. Wales. Port Jackson, *R. Brown;* Glendon, *Leichhardt;* Twofold Bay, *R. Brown.*

Victoria. Common about Melbourne, *Adamson*, *Robertson*, *F. Mueller;* Station Peak, *Herb. F. Mueller.*

Tasmania. Abundant throughout the island, *J. D. Hooker.*

S. Australia. Near Adelaide, *F. Mueller.*

W. Australia. Grassy places, Mount Barker, and Upper Kalgan river, *Oldfield;* also *Drummond* and *Preiss, n.* 130.

88. CRYPTOSTEMMA, R. Br.

Involucre broadly hemispherical, the bracts imbricate in several rows, the innermost row with much longer lanceolate membranous tips. Receptacle pitted, without bristles or scales. Florets of the ray ligulate, neuter. Disk-florets short, hermaphrodite, tubular, 5-toothed. Anthers sagittate at the base but scarcely tailed. Style-branches thickened and concrete nearly to the

end. Achenes of the ray abortive, of the disk oblong, densely enveloped in an intricate wool. Pappus of about 6 to 8 short, lanceolate scales concealed in the wool.—Perennial with radical or alternate leaves, pinnatifid or pinnately divided. Scapes or peduncles single-headed.

The genus consists of but two species, both South African, one of them the same as the Australian one. It is very closely allied to *Arctotis*, scarcely differing except in the pappus.

1. **C. calendulacea,** *R. Br.*; *DC. Prod* vi. 495. A perennial usually tufted and almost stemless, the leafy prostrate stems sometimes however lengthening out especially under cultivation. Leaves 3 to 6 in. long, deeply pinnatifid or pinnately divided into oblong or lanceolate acutely toothed or lobed segments, glabrous or scabrous above, cottony-white underneath. Scapes or peduncles leafless, 1-headed, glandular, rarely exceeding the radical leaves and often shorter than them. Involucre 7 to 8 lines diameter, glabrous or slightly cottony. Ray-florets yellow, the ligula narrow, ½ to 1 in. long. Disk purple.—Harv. and Sond. Fl. Cap. iii. 467; Steetz in Pl. Preiss. i. 487.

Victoria. Common about Melbourne, the whole pastures strewed with its woolly achenes like pellets in autumn, *Adamson.*

Tasmania. Introduced about Hobarton, *Gunn.*

S. Australia. Very common on roadsides about Adelaide, *F. Mueller.*

W. Australia. Very abundant about Perth, where it occurs sometimes with double flowers, the ray-florets variously divided or much increased in number, *Preiss, n.* 129.

The species is South African, and may have been introduced into Australia from the Cape. The following *Calendulaceæ* have also been sent from Australia as introduced weeds:—

Tripteris clandestina, Less.; Harv. and Sond. Fl. Cap. iii. 428. An erect branching slightly pubescent annual of 1 to 2 ft. Leaves oblong or lanceolate, the lower ones petiolate and sinuate-toothed, the upper ones small distant sessile or stem-clasping. Flower-heads all nodding at the ends of the branches. Involucral bracts narrow, all equal in a single row with scabrous centres and scarious margins. Receptacles without scales. Ray-florets ligulate, female, the ligulæ scarcely exceeding the involucre. Disk-florets tubular, hermaphrodite, but sterile. Achenes of the ray with 3 angles produced into broad longitudinal scarious wings. Pappus none. Disk-achenes abortive. *T. atropurpurea*, Turcz. in Bull. Mosc. 1851, i. 212.—W. Australia, *Drummond, 3rd Coll. n.* 131. Probably introduced from the Cape.

Calendula officinalis, Linn.; DC. Prod. vi. 451. An erect or spreading much-branched annual of about 1 ft., green, pubescent and more or less glandular. Lower leaves spathulate, upper ones lanceolate or oblong, entire or slightly toothed, stem-clasping at the base. Flower-heads terminal. Ray-florets ligulate, female, much longer than the involucre, of an orange-yellow. Disk-florets tubular, hermaphrodite but sterile. Achenes of the ray in 2 or 3 rows, elongated and incurved, the inner face smooth, the margins of the outer ones dilated with a ridge of tubercles or prickles along the centre of the back.—A S. European species introduced about Adelaide, from whence is also, in Herb. F. Mueller, a single specimen of *C. arvensis*, Linn., a species or variety distinguished by its much smaller flower-heads and smaller achenes, the outermost ones narrow and elongated, the others very much shorter and broader.

TRIBE XI. MUTISIACEÆ.—Leaves alternate. Flower-heads either heterogamous with radiating female florets or homogamous with tubular florets, some or all of the outer florets in all cases more or less 2-lipped. Receptacle mostly without scales. Anthers pointed or tailed at the base. Style usually thickened under the branches which are erect, truncate and often short as in the *Calendulaceæ*, more rarely elongated and obtuse, almost as in *Senecionideæ.*

89. AMBLYSPERMA, *Benth.*

Involucre broadly hemispherical, the bracts imbricate in several rows, the outer ones gradually shorter. Receptacle without scales. Ray-florets female, ligulate, with an upper lip divided to the base into 2 filiform segments; disk-florets tubular, hermaphrodite, 5-lobed. Anthers with long tails. Style-branches elongated, obtuse. Achenes short, thick, villous. Pappus of numerous rather rigid capillary bristles. Perennial. Leaves radical. Scapes leafless, single-headed.

The genus is limited to a single species endemic in Australia, and the only representative there of a tribe numerous in species in South America, with a few African and tropical Asiatic ones.

1. **A. scapigera,** *Benth. in Hueg. Enum.* 67. A perennial with a tufted woolly stock. Leaves all radical, from ovate to narrow-oblong, 1 to 3 in. long, besides the long petioles, obtuse, sinuate, shortly and broadly lobed or almost lyrate, cottony-white underneath, surrounded at the base by the persistent woolly remains of old petioles. Scapes simple, 1 to 2 ft. high, bearing a few small bracts and a large terminal flower-head. Involucre $\frac{3}{4}$ to $1\frac{1}{2}$ in. diameter, more or less covered with white wool, the bracts lanceolate acuminate. Florets of the ray 12 to 20, the lower lip or ligula above 1 in. long, the filiform segments of the upper not half so long, the anthers present but imperfect. Disk-florets numerous, as long as the involucre, the lobes linear. Anther-tails slightly bearded at the end. DC. Prod. vii. 20; Steetz in Pl. Preiss. i. 487; *Celmisia spathulata*, A. Cunn. in DC. Prod. v. 209.

W. Australia. King George's Sound and thence to Cape Riche, *Huegel*, *A. Cunningham*, *Preiss*, *n.* 64, *Drummond*, *n.* 389, and others; Tone river, *Maxwell*; Murray river, *Oldfield*.

TRIBE XII. CICHORIACEÆ.—Leaves alternate. Flower-heads homogamous, with all the flowers ligulate.

90. MICROSERIS, Don.

(Monermios, *Hook. f.*; Phyllopappus, *Walp.*)

Involucre of several nearly equal bracts in about 2 rows with a few short imbricate ones outside. Receptacle without scales. Florets all ligulate. Achenes cylindrical with smooth longitudinal ribs, not beaked. Pappus of linear chaffy flat scales in about 2 rows tapering into simple or shortly plumose bristles.—Herbs with radical usually pinnatifid leaves. Scapes leafless, single-headed. Florets yellow.

Besides the Australian species which extends to New Zealand, there is a closely-allied one from extratropical S. America.

1. **M. Forsteri,** *Hook. f. Fl. Nov. Zel.* i. 151, *and Fl. Tasm.* i. 226. *t.* 66. A glabrous perennial with fleshy roots thickened into tubers and a milky juice. Leaves radical, attaining 8 to 10 in. in luxuriant specimens, but often not half so long, narrow-lanceolate or linear, entire or pinnatifid with short distant lobes. Scapes exceeding the leaves. Involucre 6 to 8 lines long in most Australian specimens. Florets exceeding the involucre. Pappus-

bristles or scales in the commonest form not much dilated in the lower part and only very minutely serrulate.—*Scorzonera scapigera*, Forst. Prod. 91; *Scorzonera (Monermios) Lawrencii*, Hook. f. in Hook. Lond. Journ. vi. 124; *Phyllopappus lanceolatus*, Walp. in Linnæa, xiv. 507; Sond. in Linnæa, xxv. 529.

N. S. Wales. Goulburn plains, *A. Cunningham*; Nangas, *M'Arthur*; New England, *C. Stuart.*

Victoria. Common about Melbourne and to the Glenelg, *Robertson*, *F. Mueller*, and others; Skipton, *Whan*; Mount Remarkable, Delatite river, *F. Mueller.*

Tasmania. Derwent river, *R. Brown*; abundant in good soil in many parts of the island, *J. D. Hooker.*

S. Australia. Reedy Creek and Guichen Bay, *F. Mueller.*

Also in New Zealand.

Var.? *subplumosa.* Pappus-bristles strongly ciliate, almost plumose. I can perceive no other difference.

W. Australia, *Drummond*, *5th Coll. n.* 366. Scott's Brook, near Cape Arid, *Maxwell*

91. HYPOCHŒRIS, Linn.

(Cycnoseris, *Endl.*)

Involucre broad or narrow, often elongated after flowering, the bracts imbricate. Receptacles with a few linear chaffy scales between the florets. Florets all ligulate. Achenes usually striate, all or the inner ones only tapering into a slender beak bearing a pappus of plumose bristles.—Annuals or perennials. Leaves radical. Stems simple or with a few long branches, leafless or nearly so. Florets yellow.

The genus is spread over the northern hemisphere, extending also to extratropical South America. The only Australian species is found nearly over the whole range of the genus.

1. **H. glabra,** *Linn.; DC. Prod.* vii. 90. A glabrous annual. Leaves all radical, narrow, spreading, more or less toothed or pinnately lobed. Stems 6 in. to 1 ft. high, usually divided into a few slender branches, leafless except small scales at the base of the branches. Flower-heads solitary at the ends of the branches. Involucre cylindrical, at first small, but lengthening out to from $\frac{1}{2}$ to $\frac{3}{4}$ in. when in fruit, of a few imbricated bracts, the outer ones short and appressed. Achenes striate and transversely pitted, the pappus of the outer ones sessile, that of the others borne on a long beak terminating the achene.—Steetz in Pl. Preiss. i. 488; *Cycnoseris australis*, Endl. in Bot. Zeit. 1843, 459.

N. S. Wales. Paramatta, *Woolls.*

Victoria, *Robertson*; near Skipton, *Whan*; Wimmera, *Dallachy.*

Tasmania, *Gunn*; Flinders Island, *Milligan.*

S. Australia. Common, *F. Mueller* and others.

W. Australia. Kalgan river, *Oldfield*; Swan River, *Drummond*, *n.* 74, *Preiss*, *n.* 119.

H. radiata, Linn.; DC. Prod. vii. 91. A perennial resembling *H. glabra*, but taller, with larger flower-heads, the leaves hispid, and all the achenes terminating in a slender beak bearing the pappus, a common European species, is amongst the introduced plants in the neighbourhood of Paramatta, *Woolls.*

92. PICRIS, Linn.

Involucre of several nearly equal erect inner bracts, with 2 or 3 rows of smaller outer ones, usually spreading. Receptacle without scales. Florets all ligulate. Achenes transversely striate or muricate, not at all or very shortly beaked. Pappus of whitish fine bristles, of which the inner ones at least are plumose.—Coarse hispid annuals. Leaves alternate, toothed. Flower-heads in a loose irregular corymb. Florets yellow.

A genus containing but few species, natives of the temperate and subtropical regions of the northern hemisphere in the Old World, one of which is also the Australian one, and is found as an introduced plant in other parts of the world.

1. **P. hieracioides,** *Linn.; DC. Prod.* vii. 128. A biennial from 1 to 2 or 3 ft. high, covered with short rough hairs, most of which are minutely hooked so as to cling to whatever they come in contact with, but rather less so in some of the Australian than in the northern specimens. Leaves lanceolate or, especially in Australian specimens, linear, the lower ones tapering into a petiole, and often 6 in. long or more, the upper ones few and small. Peduncles rather long and stiff, the upper ones sometimes irregularly umbellate. Involucres from under ½ in. to nearly ¾ in. long. Achenes very strongly transversely striate or muricate, usually contracted under the pappus or tapering into a very short beak. Pappus-bristles usually very plumose, except a few of the outer ones of each achene.—Hook. f. Fl. Tasm. i. 227; *P. angustifolia*, DC. Prod. vii. 130; Sond. in Linnæa, xxv. 529; *P. attenuata*, A. Cunn. in Ann. Nat. Hist. ii. 125; *P. barbarorum*, Lindl. in Mitch. Three Exped. ii. 149, and in Bot. Reg. 1838, Misc. 58; *P. asperrima*, Lindl. in Bot. Reg. 1838, Misc. 58; *P. hamulosa*, Wall.; DC. Prod. vii. 129.

Queensland. Shoalwater Bay, *R. Brown*; Moreton Island, *M'Gillivray*; Rockhampton, *Dallachy.*

N. S. Wales. Port Jackson, *R. Brown, Woolls*: Macleay, Clarence, and Hastings rivers, *Beckler*; New England, *C. Stuart*; north of Bathurst, *A. Cunningham*; Lachlan and Darling rivers, *Victorian Expedition.*

Victoria. About Melbourne, *Adamson*; Wimmera, *Dallachy.*

Tasmania. Port Dalrymple, *R. Brown*; common in the northern parts of the island, *J. D. Hooker.*

S. Australia. Port Lincoln, *R. Brown, Wilhelmi*; Murray river to St. Vincent's Gulf, *F. Mueller* and others; Kangaroo Island, *Waterhouse.*

W. Australia. Swan River, *Drummond, 1st Coll. also 4th Coll. n.* 216; Capel and Blackwood rivers, *Oldfield.*

Var. *squarrosa.* More hispid, with larger flower-heads and more numerous recurved outer involucral bracts.—*P. squarrosa*, Steetz in Pl. Preiss i. 488; Sond. in Linnæa, xxv. 529.—Port Phillip, *Gunn*; S. Australia, *F. Mueller* and others, and various parts of W. Australia, *Drummond, Preiss, n.* 108, *Oldfield, Maxwell.*

The species is very common in the northern hemisphere in the Old World, and has much spread with cultivation in other countries. It may therefore be an introduced plant in many of the Australian localities. In others however there is every probability of its being truly indigenous.

93. CREPIS, Linn.

(Youngia, *DC.*)

Involucre of a single row of nearly equal bracts, with a few small outer ones. Receptacle without scales. Florets all ligulate. Achenes oblong, cylindrical or scarcely flattened, striate, tapering at the top, but without a dis-

tinct beak. Pappus of numerous fine white soft simple bristles.—Annual or perennial herbs, usually branched. Leaves alternate or radical, mostly toothed or lobed. Flower-heads in loose irregular corymbs or panicles. Florets yellow.

A large genus, widely distributed over the temperate regions of the northern hemisphere, with a few subtropical species, the only Australian one extending into tropical and Eastern Asia.

1. **C. japonica,** *Benth. Fl. Hongk.* 194. An erect slender annual, 6 in. to near 1 ft. high, glabrous or slightly pubescent or hairy near the base. Leaves mostly radical, petiolate, varying from obovate, nearly entire and 1 to 2 in. long, to lyrate or pinnatifid, 2 to 4 in. long, with a large terminal toothed lobe. Stem-leaves few or in the Australian specimens usually none. Panicle slender, loosely corymbose. Flower-heads small, numerous. Involucres about 2½ lines long, containing 10 to 15 small yellow florets.—*Prenanthes japonica*, Linn.; *Youngia japonica*, DC. Prod. vii. 194, also *Y. Thunbergiana*, and some others of DC. See A. Gray in Mem. Amer. Acad. vi. 396.

Queensland. Shoalwater Bay, *R. Brown*; Dawson river, *F. Mueller*. Dunk Island, *M'Gillivray*; Rockhampton, *Thozet*, *Dallachy*.

N. S. Wales. Hunter's and Grose rivers, *R. Brown*; Mackay and Hastings rivers, *Beckler*.

The species is common in India, and extends on the one hand to Ceylon and the Mauritius, and on the other to China and Japan.

94. SONCHUS, Linn.

Involucre ovoid, with imbricate bracts, and usually becoming conical after flowering. Receptacle without scales. Florets all ligulate. Achenes flattened and striate, not beaked. Pappus of numerous fine bristles, usually soft and white.—Herbs either annual or in species not Australian perennial or shrubby. Leaves alternate, usually toothed or lobed. Flower-heads small or large in loose corymbs or panicles. Florets yellow or (in species sometimes separated from the genus) blue.

A considerable genus, ranging over the temperate regions of the northern hemisphere, the Australian species extending over the whole range of the genus, and introduced into almost every part of the world.

1. **S. oleraceus,** *Linn. Spec.* 1116. An erect annual, with a hollow stem, 1 to 3 or even 4 ft. high. Leaves thin, bordered by irregular acute or prickly teeth, otherwise either undivided or pinnatifid with a broad heart-shaped or triangular terminal lobe, the upper ones narrow and clasping the stem with short auricles. Flower-heads in a short corymbose terminal panicle, sometimes almost umbellate. Florets of a pale yellow.—Steetz in Pl. Preiss. i. 489; *S. asper*, Fuchs; Hook. f. Fl. Tasm. i. 227; Steetz in Pl. Preiss. i. 489; *S. ciliatus*, Lam., and *S. fallax*, Wallr., DC. Prod. vii. 185.

N. S. Wales. Port Jackson, *R. Brown*, *Woolls*; Hastings and Clarence rivers, *Beckler*.

Victoria. Near Skipton, *Whan*.

Tasmania. Port Dalrymple, *R. Brown*, common, but only near the sea and on the north shore of the island, *J. D. Hooker*.

S. Australia. Mount Gambier, Bugle Range, Torrens river, etc., *F. Mueller*; towards Spencer's Gulf, *Waterhouse.*

W. Australia. Swan River, *Drummond, n.* 75, 317, *Preiss, n.* 116, 117; Don river, *Maxwell*; Murchison river, *Oldfield.*

A weed of cultivation, probably indigenous to Europe and temperate Asia, but now distributed over the greater part of the globe and perhaps truly indigenous in Australia. There are two marked varieties; in the one (*S. asper*) the ribs of the achenes are perfectly smooth, in the other, for which the name of *S. oleraceus* is more specially retained, they are marked with transverse asperities. Both occur in Australia, as also a maritime variety with the flowers almost as large as in *S. arvensis*, but without the glandular hispid involucres of that species.

The following European *Cichoriaceæ* are amongst the introduced weeds in some of the Australian colonies.

Arnoseris pusilla, Gærtn.; DC. Prod. vii. 79 (*Lapsana pusilla*, Willd.). A small annual, glabrous or nearly so. Leaves all radical, obovate or oblong, toothed. Flower-stalks slightly branched, leafless, the erect branches or peduncles enlarged and hollow upwards, each bearing a small head of yellow florets, all ligulate. Involucre of few nearly equal bracts with some very small outer ones. Achenes crowned only by a minute raised border.—Tasmania, so much spread as to be apparently indigenous, *J. D. Hooker.*

Cichorium Intybus, Linn.; DC. Prod. vii. 84 (*Succory* or *Chicory*). A perennial, more or less hairy, erect with stiff spreading branches. Radical leaves spreading on the ground and lower stem-leaves pinnatifid with a large terminal lobe, upper leaves small and less cut. Flower-heads in closely sessile clusters of 2 or 3 along the branches, with large florets, all ligulate, of a bright blue. Involucre of few nearly equal bracts, with a few small outer ones. Achenes crowned by a ring of minute scales.—S. Australia, *F. Mueller.*

Leontodon hirtus, Linn. (*Thrincia hirta*, DC. Prod. vii. 99). A small herb with a perennial stock. Leaves all radical, oblong or linear, toothed, sinuate or pinnatifid. Scapes seldom above 6 in. high, bearing a single head of rather small yellow florets, all ligulate. Involucre of about 10 to 12 nearly equal bracts with a very few or scarcely any small outer ones. Achenes slightly tapering at the top, those of the outer row with a very short scaly pappus, the others of brownish plumose bristles.—Near Paramatta, *Woolls.*

Tragopogon porrifolius, Linn.; DC. Prod. vii. 113 (*Salsify*). A glabrous biennial or perennial of 1 to 2 ft., with a taproot. Radical and lower leaves long and grass-like, entire, shortly dilated and sheathing at the base, the upper ones shorter and broader. Peduncles long, thickened at the summit, each with a single head of purple florets. Involucre of 8 to 12 nearly equal bracts longer than the florets. Achenes narrowed into a long beak, bearing a pappus of feathery bristles.—Now spreading in the cultivated fields near Camden, *Woolls.*

Lactuca saligna, Linn.; DC. Prod. vii. 136. An erect stiff glabrous annual or biennial of 2 or 3 ft. Leaves narrow, erect, clasping the stem with pointed auricles, entire or with few teeth or narrow lobes. Flower-heads rather small, clustered on the short branches of a simple panicle. Involucre narrow, 4 or 5 lines long, of a few imbricate bracts. Florets 6 to 10, of a pale yellow, all ligulate. Achenes much flattened, obovate-oblong, produced into a slender beak two or three times their own length and bearing a pappus of numerous white silky simple bristles.—Australia Felix, *F. Mueller.*

Taraxacum Dens-leonis, Desf.; DC. Prod. vii. 145 (including also perhaps the whole 25 supposed species of De Candolle's § 2) (*Dandelion*). A perennial with a thick bitter taproot. Leaves radical, varying from linear-lanceolate and almost entire to deeply pinnatifid, the lobes often curved downwards. Scapes leafless, rarely exceeding 6 in., bearing a single rather large flower-head. Involucre of several nearly equal bracts with some smaller outer imbricate ones often recurved. Florets yellow, all ligulate. Achenes scarcely compressed, striate, tapering into a slender beak two or three times their own length and bearing a pappus of numerous simple hairs. Now common about Melbourne and in the plains of the Avon, *F. Mueller*; also in Tasmania, and in West Australia, *Drummond, n.* 367.

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